Clean Air Strategy for Alberta

Report on the Regional Sessions

Volume II: *Verbatim Transcript*

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This document is Volume II of the three-volume *Report on the Regional Sessions* and is the *Verbatim Transcript* of the public meetings. Volume I is the *Moderator's Report*. Volume III, parts one and two, are the *Written Submissions*. Part one is submissions from governments, industry and individuals and part two is from public interest groups and schools. Volume I has wide distribution and may be obtained at the address below. Volumes II and III, parts one and two, are on file at many public libraries for public access and for inter-library loan.

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ORIGINAL

CLEAN AIR STRATEGY FOR ALBERTA

Transcript of Proceedings

Regional Meeting

Held at Bonnyville, Alberta, on
Tuesday, November 6th, 1990

Appearances:

Vern Millard - Moderator

Susie Washington - and Kate Hoos Western Environmental and Social Trends

Don Meyer, CSR(A) - Court Reporter

Transcript of Proceedings

(Meeting commenced at 7:15 p.m., Tuesday, November 6th, 1990)

MODERATOR MILLARD: Well, ladies and gentlemen, let me say welcome to you. This is the first of a series of regional meetings. The attendance isn't large tonight, but that probably provides us with an opportunity to have a good dialogue. The subject, of course, is the Clean Air Strategy for Alberta.

My name is Vern Millard, I have been asked to moderate the meetings, and it's been suggested to me that I provide some opening comments to give a kind of broad overview, and that's what I would like to do right now, and if you have any questions when I am running through my comments don't hesitate to interrupt and ask questions. What I have done is to provide a number of overlays that I think might provide a kind of a basis for discussion of the general subject of Clean Air Strategy.

The important place to start, of course, is what do we mean by a Clean Air Strategy, and if you follow the research of scientists, it's been going on for some decades really, but particularly in the last decade I think it's clear that our planet is in some degree of difficulty, primarily through man-made emissions. There is a growing consensus, it's not universal yet but a growing consensus among scientists, that emissions need to be reduced.

The Clean Air Strategy is designed to encourage the public discussion of these very vital issues in terms of our society, not only today but perhaps in particular for the future for our children, and for us that are really old, our grandchildren. The Clean Air Strategy will identify the most important issues, it will develop practical approaches for reducing emissions, and it will recommend policies and programs to achieve those objectives.

The Clean Air Strategy for Alberta is a four-stage process. The first stage of that process was what was a workshop that was conducted in September of this year, at which time representatives of industry, environmental groups, public health, research, and government people reviewed the problems associated with emissions. The workshop identified key issues and options that related to a Clean Air Strategy. One of the comments that I have heard from people who were at that workshop was the fact that they were somewhat amazed at the degree of agreement, the consensus that action needs to be taken and emissions need to be reduced.

The second stage of the process is what we are engaged in tonight, meeting in regional meetings throughout the province. And there are what, Susie, five or six of these meetings?

SUSIE WASHINGTON: Eight.

MODERATOR MILLARD: Eight, sorry, to get the views of local people in terms of these particular issues. Then, next spring, there will be a meeting or a workshop to consider the various ideas that have come forward; and finally, there will be a report that will be forwarded to the government. So that's the four-stage process that this is part of.

In thinking about a Clean Air Strategy, it seems to me that the first point we want to consider are what are the major problems that our environment or our planet faces today? As I mentioned before there's been, over the last two or three decades and beyond that really, a substantial amount of scientific research that has been going on, and the general trend of this research has been the overall confirmation that there are problems.

I was noticing in the paper this week a report on a conference that was attended by 700 scientists in Geneva just over the weekend in which they were reviewing global warming, and there was consensus that this was and is a very serious problem for our planet in the future, and that we really need to do something about it by reducing emissions. The thrust of the newspaper article was that unless we do that, we can look forward to increasing average temperatures, which have pretty serious impacts over the long run for our planet, the melting of the ice cap, higher levels of water in the ocean, and all the things that go with that. So the consensus, broadly speaking, is that we have some problems on a long-term basis.

There are three major problems that we can identify, and there are others, but I would like to focus in on three. The first is the greenhouse effect or the so-called global warming. It's caused by emissions of carbon dioxide into the atmosphere. Those gases trap the energy that's naturally radiated from the earth, and hence results in increasing temperatures on the surface of the earth. Fossil fuels and water are the major sources of the greenhouse gases which cause the problem, and the emissions of greenhouse gas occur both in terms of producing fossil fuels, and also in terms of using fossil fuels, so it's a double-sided coin.

We are privileged to have a drawing by Kate, who depicted what the greenhouse effect really looks like, and as you can see, the green circle depicts the edge of the earth, the outer circumference of the earth, and the black line above that is what would normally be the limit of greenhouse gases, and then over on the right-hand side it shows the impact of increases in those greenhouse gases and the returned radiation to the earth, and consequently the increase in temperature.

We have talked about the first major problem that we have in terms of emissions to the atmosphere. The second problem is acid precipitation or acid deposition, frequently called acid rain. It's received a good deal of publicity over the last decade in particular. We have heard about the problems of its impact in Eastern Canada, in United States, and more recently impacts in Eastern Europe.

Acid rain is caused by sulphur oxides and nitrogen oxides being emitted to the atmosphere. Sulphur oxides really, in Alberta, stem from the processing of our fossil fuels; sour gas, sour oil, and coal for the generation of electricity that has sulphur entrained in it. Nitrogen oxides stem from general industrial development, but also from consumer operations such as motor vehicle operations, the cars that we drive each day.

The third major issue or problem with respect to clean air and the Clean Air Strategy is smog. It also has received a fair amount of publicity over the last decade or two. We have tended to associate it, I think, with other areas such as Los Angeles, however, it occurs in Canada. If you look at the data you will see that it occurs in Ontario more particularly than in Western Canada, but Calgary and Edmonton are not immune, and if you have looked at the skyline in either city you will see that yellow cloud that sometimes hangs over the city. So there is a potential problem that exists there. It also is caused by fossil fuels and nitrogen oxides. Nitrogen oxides, in particular, is a major contributor. So it is one of the list of one of three major problems that we have to deal with.

In looking at a Clean Air Strategy, and after identifying the problems, one might well ask "well what is being done to solve the problems?" I think it's important to recognize that action is being taken, not just on the local scene but more particularly on a global scene, on an international scene, and there are a series of international committees and workshops and conferences that are leading to action with respect to the these problems.

Sulphur oxides were part of a discussion, through the U.N., that took place in 1985, and as you probably remember there is an agreement, by the parties, to reduce the volume of SO/2 that was being emitted to the atmosphere; nitrogen dioxide, there was an agreement in 1988; carbon dioxide, the international scene is considering policy options, but in Canada the governments have adopted a target and the provinces and the Federal Government, as I understand it, are working towards it. Really, that's perhaps one of the driving forces with respect to the Clean Air Strategy. Of course, a major factor in what can and what is being done is continuing research into the whole question.

Another issue that we need to address in terms of developing a Clean Air Strategy, I think, is how does Alberta fit into the total picture, what is our role, and what is our degree of contribution to the problem?

One of the important factors that Albertans have to recognize is that we are a major producer of fossil fuels. In the case of gas, Alberta produces 83 percent of the total Canadian production; in oil it's 80 percent; in coal it's 44 percent. Really, partly as a result of that kind of production, Alberta's share of the emissions is relatively significant or relatively large in Canada. For example, sulphur dioxide is 15 percent of the total of the Canadian total; nitrogen dioxide, the Alberta share is 23 percent; and the carbon dioxide, it's 22 percent. Those numbers can probably be compared to our share of the population, which population is roughly 10 percent, so that we end up with a relatively high contribution or a relatively high per capita emission rate. But I think we have to recognize certain things.

An important factor is that 75 percent of the oil and gas that's produced in Alberta is delivered to markets in Eastern Canada or the United States, so I think one can argue -- I am not sure if everyone would believe it or agree with it -- but I think one can argue that the emissions that take place in Alberta are really on behalf of consumers that, in part, live outside the province. Canada's share of carbon dioxide, and probably I would think nitrogen oxide, is about 2 percent of the total world emissions.

Fossil fuels are obviously a very important factor to the province on an economic basis. In 1989 the value of energy produced in the province, oil, gas, and coal, was about $15 1/2 billion, the royalties paid to the provincial government were $2.4 billion, which is about 24 percent of the total provincial revenue, so it's a significant factor from that point of view. The energy industries account for about 250,000 direct or indirect jobs in the province, so fossil fuels and their production and use are significant for the province.

I think that one of the interesting aspects of this question is that clearly we are all, each of us, you and I, involved in this process or involved in this problem. We can see that the burning of fossil fuels has a significant impact on the environment, and particularly the long-term impacts for our globe and atmosphere, but the sources for those emissions are brought in the industrial side, the production side, and also in the consuming side, and as consumers we all partake of that same kind of activity. We all drive our cars, we all heat our homes with gas or some other fossil fuel, and so we are all part of the problem. It isn't the kind of case where we can attribute the cause to some other party. There are a variety of us that are involved in it, and if we are going to find answers to the problem, we all have to be involved.

If we look at CO/2 and NOx emissions for example, on a rough basis the energy industry, the processing of energy resources, requires about a third, or contributes about a third of the emissions, other industrial development accounts for another third, and our own public consumption accounts for another third. So we are in it, and if we are going to solve the problem, we have got to be part of that answer.

The next question is what do we really mean by "clean air"? And the definition that we have used to date, I think I am right in this, other people will perhaps correct me, but my understanding is that we accept, as clean air, air that may contain other impurities, such as emissions from fossil fuel burning, but as long as those emissions do not cause adverse effects upon human health or vegetation or materials, we consider it to be clean air.

When you think about that definition and when you relate it to the kind of problems that I was referring to before, namely these long-term global problems where 10 or 20 or 50 years from now the continued emission of fossil fuel gases into the atmosphere may cause this warming trend, and with the consequences that follow from that, it seems to me that perhaps we need to change the definition. The definition really doesn't allow for these long-term global impacts such as the greenhouse effect, and thus, even if we assume that Albertans today have clean air -- and I know that there are probably some people that would quarrel with that assumption but if we just make that assumption -- then we still aren't really addressing the problem because, even under that assumption, we are still emitting substantial quantities of fossil fuel gases into the atmosphere which have this long-term effect and can cause these problems that we have been referring to.

So we really must still reduce the emissions of these gases to the atmosphere if we are really going to have clean air in a definitional context that will be long-term, or that will deal with the long term, maybe I should put it that way.

Well how can we reduce emissions? That's the burning question, no pun intended I might say. The basic alternatives are, first, to produce less energy. If we shut down our oilsands plants or our heavy oil production or our conventional oil industry or our gas industry, obviously we would produce less energy, we would have less emissions, and that would be one way -- a pretty drastic way but it would be one way -- of meeting that target.

Another way is for us individually to use less energy, and we all, I am sure, know what that means; we don't drive as far, we don't heat our homes quite as much, etcetera.

Another way is to use the energy we use more efficiently; and the typical examples are better insulation in homes, more efficient utilities, and so on.

And lastly, we can shift to non-polluting energy sources. The things, the alternatives that come to mind are solar energy, biomass, etcetera, and I think we can all see how these could have an impact on the amount of energy used and improve the total, reduce the total emissions. Clearly, some have more drastic impacts than others.

Obviously, there is a time factor that is involved here, because one can't turn the world around overnight, and probably, in thinking in terms of solutions, we may well need to think in terms of combinations of these alternatives rather than just one or the other.

The next question is how can we, as individuals, reduce emissions? Remember I was referring, before, to the fact that we are all part of the problem because we all use energy for a variety of uses in our own lives? Now that's really the purpose for our regional meetings. We really want to get the views of you that are present in this meeting, and in the subsequent seven regional meetings that are going to take place, and find out what you think about how we can reduce emissions, and we need your suggestions and advice to develop some policies.

Education I am sure we would all accept as a major factor, but I guess you will always have the problem of how is this going to be achieved. How can we become convinced, individually, that we need to change our lifestyle in terms of reducing emissions.

Well, finally we come to the last point, and that is what policies and programs are required for an effective clear air strategy, Clean Air

Strategy, clear and clean. Your suggestions will assist in this process.

Some possible developments, and by making suggestions I don't intend to preclude any ideas that you want to bring forward, but possible new developments are new standards, new more stringent standards in terms of what might be emitted, both in terms of the production side and also in terms of the consumption side, for example automobile standards that require or that specify much more stringent emissions from operation.

Another possibility might be limiting total emissions in a particular area so that when new plants come into that area they would, in effect, have to trade in some fashion to obtain a piece of that total airshed emission amount or quantity.

Incentives to develop new technology, because we talked before about one way of reducing emissions is to improve efficiency, and new technology is the essence of reducing or improving efficiency.

Another possibility is to change the current financial incentives, some people might say disincentives, and put in place those that will provide benefits for and encourage the use of less energy rather than more. Of course, expanding research is a major feature in terms of this kind of activity because it's, to a large extent or to a significant extent it's technically oriented. If we can develop new models, new ways of doing things, that can have or could have a major impact in terms of the emissions from our lifestyle.

Well that's a very rough overview of what might be thought of as the problems related to developing a clear and clean energy strategy.

We don't have a great deal of people out tonight, but let me ask you first of all if anyone in attendance wishes to make a submission? I don't see a great flurry of activity on that question.

Since there are few people, why don't we see if we can engage in some kind of a dialogue on the topic and see what kinds of comments and questions and suggestions come out of it? Would someone like to open the discussion?

Let me ask you this, those that are here that are much more knowledgeable than me about this area; are there issues, in terms of that overview and I suppose particularly the emphasis that I may have misrepresented to some degree, that you would like to quarrel with or comment on?

GARY TOWSLEY: I would like to just make one comment, and I am relatively ignorant on this fact, is about the air quality in Alberta and particularly in our urban areas.

I was talking with the, I don't see the gentleman here that was driving the vehicle, the mobile air quality vehicle, and in discussing it with him today he was stating that Calgary indeed has some of the worst air quality in Canada due to inversions, and during these periods of inversions it's worse than Vancouver or Montreal or Toronto, and to such an extent that the yearly average is indeed worse than some of these cities.

So I guess I would challenge the statement on there that we don't have an urban air quality problem. After all, you know, 20 percent of Albertan's live in Calgary.

MODERATOR MILLARD: No, I don't think I said we don't have an urban air quality problem, I think I said that Calgary and Edmonton have problems from time to time. But I am not sure how who you were talking to in Alberta Environment. Why don't they, that particular person, comment on this particular issue?

BOB MITCHELL: He has taken the bus back to Edmonton. I read some literature where I believe the ground level ozone is above the standard set by Environment Canada less than ten days a year in Calgary, and somewhere around half of that in Edmonton. Those are the only two centres that exceed it on any given days.

RANDY DOBKO: Actually, it's only about two days, Edmonton is only about one day. That's the latest information we have got.

So the air quality relative to some of the large urban centres, as in Vancouver and down east in Toronto and Montreal, in Edmonton/Calgary it's better but there are still problems during certain times of the year. I think that's what the other gentleman who was in the monitoring bus was trying to get across. We have a problem. It's not as extensive, but it is still there, so it is not -- it's only a matter of degree.

MODERATOR MILLARD: I guess the important question is how do we solve that problem? I think we have to accept that it exists. Those of us that live in Calgary or Edmonton see the evidence of it, and I presume that probably the greatest contributor is the motor vehicle traffic that takes place in the area, and what do we do about that? What would you suggest that, as a policy, that would help in that particular issue?

GARY TOWSLEY: I think the solution is somewhat self-evident, really. It's removing the internal combustion engine from the downtown areas. Unfortunately, implementing it is politically highly unpopular, and I don't think we have the will, within government, to inflict the inconvenience and the pain on people to reduce the emissions. I would like somebody to comment on that?

MODERATOR MILLARD: Anyone like to comment?

BRIAN DEHEER: Well I would like to make a comment in support of criticizing the internal combustion engine, and one of the places that I see an opportunity for addressing that concern is research and incentives for alternative means of transportation.

One example that I know of that is available on the market in some places is the electric car. There is a person that I work with in St. Paul -- I am from St. Paul -- who is quite interested in converting a vehicle that he has to electric power, and in places for instance like in Calgary, a significant number of the population in the city using an electric vehicle to commute between home and work, I think, could make a significant dent in the emissions that are produced there.

MODERATOR MILLARD: What about increasing or more stringent auto emission standards? Do you see that as being a potential answer to some of this?

BRIAN DEHEER: I guess I would have to say I am not familiar enough with the standards that are in place, and what increasing the stringency of the standards would result.

GARY TOWSLEY: Without trying to dominate here, a standard is only -- is not enforced. When a vehicle drives out of the showroom, it obviously meets the manufacturer's standards. Within a few short years, this same vehicle can be an oil-spewing polluter. It's difficult, although we have seen checkstops on the roads in Calgary and pulling over unsafe vehicles and polluting vehicles.

MODERATOR MILLARD: Yes?

BRIAN DEHEER: I could add that one measure that I think I would support which might also be politically unpopular is a tax on gasoline to compensate for the amount of pollution that burning of gasoline is producing. I know that taxes these days are quite unpopular, however, I guess I believe strongly that we have taken for granted the environment and the benefits of the environment, haven't been paying a fair share for the environmental damage that that's produced, so I would see it as globally ethically just, I suppose, to impose a tax on the burning of gasoline.

SUSIE WASHINGTON: Just a point of clarification. When you talk about a tax being on gasoline, do you see that as the consumer, that is you and I, paying more for burning gas which would encourage us to use less gasoline? Is that what you are saying?

BRIAN DEHEER: Yes, that's what I am suggesting.

SUSIE WASHINGTON: Yes.

DON HENNESSEY: But if we took the tax dollar that we got, can we clean this up? Right, the damage is there. Have we got a method in place to clean it up, because as a taxpayer my personal feeling is by the time the bureaucracy is done with the money, we are not getting done what we maybe should be. Like, is there a method today in place where we could go into Calgary and Edmonton, and instead of having two bad days a year in Calgary we could make it one? Is that a reality, or no, we are already past that point?

RANDY DOBKO: The problems, you have to understand that air quality is measured by a number, six parameters within the City of Edmonton, City of Calgary. Now when it was indicated that you have two problem days it's over a level, over the guideline level that has been set out, so number 1, you would have to know which level was exceeded. I believe in Edmonton it was the concentration of dust that was inhalable particulate matter in the air. That's not an easy problem to solve. In Calgary the problem tends to be one of carbon monoxide I believe, and again, you couldn't turn around and spend tax dollars to reduce it at this moment, it's more long-range, better emission controls on vehicles. That's Calgary's problem. But you couldn't turn around tomorrow and spend money and be done with it, over and done with the problem.

GUY HURTUBISE: I guess the tax dollars would be spent on research and development.

RANDY DOBKO: It's a long-term commitment that you have to make and you have to, because the tax dollars that you spend have to be focused on the major problem, and then once you have solved that, then you can turn around and start going at the smaller problems, but right now you are trying to identify what that major problem is.

DON HENNESSEY: Personally, with young children, I am for pushing the education, because in reality in my mind, I can't see this taking off this year or next year or five years, it's almost going to take a full generation. If we started with the kids today, which we are to some degree, then by the time that they were of a major decision-making age, that we would not only have the problem more defined, but the people educated enough, through a lifetime in it, to handle it better.

TOM WHARTON: There is one other thing that's happening in the States too that has to do, I think, almost as a carry-over from the '70's and the big oil price increases when we went into smaller vehicles and reduced emissions and that type of thing at that time. I think it was Golden Gate Bridge where they had toll lanes, and those vehicles with more than one driver in a vehicle, that was three or four drivers, got through toll free. I believe that was an incentive to try and reduce the number of vehicles coming into the downtown area, but it's pretty hard to do in a place like Edmonton or Calgary.

DON HENNESSEY: They still have them.

GUY HURTUBISE: Yes.

TOM WHARTON: The other point is, I suppose, on the electric car thing is you would have to look at what kinds of problems are you creating producing batteries for these electric vehicles? There are some balances there.

SUSIE WASHINGTON: You mean what kind of electricity we are using to, when you plug in your electric car? Is that the --

TOM WHARTON: The manufacture of the batteries themselves takes energy.

RANDY DOBKO: The production of electricity also takes energy.

TOM WHARTON: And the production of electricity.

MODERATOR MILLARD: Other comments, suggestions?

DON HENNESSEY: It's my understanding, from an Alberta Environment employee, that Fort McMurray has bad air from the two plants. Are their emissions over from the two plants, or are they within guidelines which is compounded, or --

RANDY DOBKO: They are underneath what they are licensed for, yet they have localized air problems, a lot of odour complaints which do not have standards, which is one of the problems, and it's making some attempt to deal with it, a whole odour protocol setup. We are going to track emissions and try to zero it back to sources. A lot of their problems are not necessarily over regulation levels or over their licence levels but it's in the minds of some groups, specifically the Indian bands, it's the odour problem. They are much more concerned with long-range health effects, which are very difficult to quantify.

There can be localized problems from the plant upsets and those, when identified, will be taken back to the plant and quick action would have to be taken to deal with it, as just recently Suncor was given an emission control order. I am not sure what they were required to do, but it was felt that action had to be taken because they had a problem and weren't moving quickly enough to deal with it.

JOHN CRISP: Could I just refer back to your city problem? Something I have not heard as yet. Would it be possible, I am from a local town here so I ask the question, is it possible to pass and enforce a local bylaw which would restrict certain areas of a municipality simply by law enforcement methodology, fines, etcetera? You can't, perhaps, enforce stricter emission controls all across the province, but you may be able to control the amount of traffic in a certain area of a municipality.

MODERATOR MILLARD: I really don't know. I would -- it would seem, offhand, that there would be problems with it, but I wonder if maybe somebody from Alberta Environment could comment on what Los Angeles has done in terms of dealing with issues like this? Am I right in assuming that they have imposed a series of special requirements? Do you happen to know?

RANDY DOBKO: At this point Los Angeles, or the State of California, has the most stringent emission control standards for new vehicles anywhere in the world I believe, and it's a requirement on all motor vehicles. The question is do you retrofit everything back, and is it -- how do you get people, like someone suggested here tonight, two years down the road, even if it meets manufacturer's specifications in the showroom, two years and no maintenance performed on it, it may not meet that standard or requirement. So you can set those guidelines or set the standards from a manufacturing point of view, but unless there is a specific program in place for enforcement or just indicating to people whether or not their vehicle runs up to specification, it's difficult to control.

SUSIE WASHINGTON: I would think, with respect to bylaws, that if a municipality wanted to pass a bylaw that banned automobiles from the downtown core, that's within your jurisdiction to do so. Things like that are.

JOHN CRISP: Thank you. That's correct.

BOB MITCHELL: Or to ban diesel vehicles from certain areas of a community.

DON HENNESSEY: Do diesel engines emit more than gas?

RANDY DOBKO: They have a higher particulate emission, and I believe NOx is equivalent, carbon monoxide is fairly equivalent. I am not quite sure offhand.

MODERATOR MILLARD: To what extent do you believe your friends and associates are aware of this problem? Is it, you are out tonight, you obviously have some concern with respect to it. Do you see yourselves as being somewhat unique, or are you representative? Anyone like to comment? Yes?

BRIAN DEHEER: I would say that I suspect we are probably representative of the population in general.

To the extent that most of us are aware that there are global problems, global atmosphere problems and that it's becoming more urgent for some action to be taken on these problems, I guess I might reflect on the turnout here tonight and the fact that it's sort of small as being a reflection of the fact that a lot of people around here don't see that we in the area have a particular air problem here and we don't play a large role in generating the emissions in this area. So there would be those two comments that I would make.

MODERATOR MILLARD: Are there other comments or suggestions as to --

LARRY CUNNINGHAM: I have got a comment. The fellow mentioned the global problem. You have your 2 percent, Canada's 2 percent of the world, and Alberta is quite a small percentage of that. I feel we should be pushing to make it more of a global problem and handle it as such, whereas if we push it on a local basis or a provincial basis, we may be pricing our industries out of a competitive range.

DON HENNESSEY: Somebody has got to start the ball rolling I guess.

LARRY CUNNINGHAM: Yeah, that's what I was thinking, push the global issue, more that it is a global problem and treat it as such.

MODERATOR MILLARD: If agreements were reached between countries would that help your, as to what each of them would do, would that help your concern?

LARRY CUNNINGHAM: Well, for industry to be competitive, you have got to be working in the same parameters.

MODERATOR MILLARD: And of course if there was agreement, --

LARRY CUNNINGHAM: Yes.

MODERATOR MILLARD: -- then that would be the case, assuming they started from the same level?

LARRY CUNNINGHAM: Yes.

MODERATOR MILLARD: Well there is no doubt it's a complex problem. Other comments? Susie? Oh, sorry?

BRIAN DEHEER: I would respond to the previous comment about, I think you were asking for suggestions on how to convince people that some actions are needed, and I personally value the slogan and try and follow the slogan of "think globally, act locally", and so for that reason I think of myself in the position of being a consumer, and as a consumer, I try and think of things that I can do.

And, actually, I'll use that to lead into my next point, which was on alternative fuels. That is something that I have thought about a great deal, and I am aware that there are alternatives to gasoline fuel that I could convert my car to, for instance propane and natural gas. Propane is now quite readily accessible in most places, so that would be one alternative. Natural gas would be another, although I am not familiar with how readily available that is.

One of my questions about those two, though, is that aren't they also fossil fuels and don't they also still produce the same kinds of emissions and to the same levels?

MODERATOR MILLARD: Would somebody from Alberta Environment like to respond?

RANDY DOBKO: Natural gas and propane are smaller-chain hydrocarbons. Yes, they are still fossil fuels, but they do burn cleaner, they would produce less emissions, but unfortunately they don't have the energy content that gasoline does for the same unit volume. Gasoline, being a liquid, has more energy in a tank than what propane or natural gas would, so you are giving up, in some cases, convenience and the accessibility to the fuel, but they are a somewhat cleaner fuel and would produce less carbon dioxide for the amount burned.

They still have problems, they are still fossil fuels, and you haven't completely eliminated emissions of carbon dioxide or carbon monoxide or oxides from nitrogen.

BRIAN DEHEER: Once those tradeoffs are balanced, how does the end result differ? I drove up here from St. Paul, I will drive back. Would I have emitted less pollutants if my car was powered on propane or natural gas?

RANDY DOBKO: I believe you would be emitting less carbon dioxide.

GARY TOWSLEY: Are you sure on the carbon dioxide? I think the straight geometry of that is that you are still going to have to make the carbon dioxide, but your emissions are NOx, and you're --

RANDY DOBKO: Well, just the fact that natural gas and propane are cleaner burning would limit carbon monoxide.

GARY TOWSLEY: Right.

RANDY DOBKO: And --

GARY TOWSLEY: Right, but not carbon dioxide.

RANDY DOBKO: Not carbon dioxide. The other thing is how hot does natural gas burn, or propane as opposed to gasoline in the internal combustion engine. Once you can figure that out, you could get an idea how much NOx is emitted. Again, I don't have all these figures off the top of my head.

DON HENNESSEY: But, and I don't own one, but it's my understanding that people that are burning propane are getting more miles per gallon of propane than they were on gas, so that you are at least using fossil fuel more efficiently, and I don't even know if that's true because I don't own a propane vehicle, but a lot of people are converting for that reason. That's my understanding.

GARY TOWSLEY: The economics of it definitely favour propane. All the vehicles, all the taxi cabs in Calgary that are still in business use propane, so the economics are there. It is a cleaner burning fuel, but it is not tackling greenhouse gases to the extent that you still have outrageous carbon dioxide.

RANDY DOBKO: It's still a problem with respect to emissions of greenhouse gases. You haven't eliminated them. There are other fuels, alternate fuels, that would get away from that, but any fossil fuel would generate carbon dioxide to some extent.

DON HENNESSEY: Well, what's an alternative fuel?

RANDY DOBKO: Hydrogen. It is something that has been proposed and there is a study to be done by Environment Canada trying to convert, or trying to make Canada a hydrogen economy base or energy source of hydrogen, but it's in the planning stage. It's long-term research you can look at.

DON HENNESSEY: What's long-term, 5, 10, 20?

RANDY DOBKO: Any number. If enough time and effort is directed towards that goal, it could be as short as 5, as long as 25.

BOB MITCHELL: The problem, I think, with hydrogen is it takes energy to produce it, so it's not a source, it's just a currency.

BRIAN DEHEER: Despite those problems, though, from everything that I have heard and read about hydrogen, that's certainly quite an appealing solution to me, and if I was able to convert my car to hydrogen and was able to buy it, you know, pretty much everywhere, I would do that at the drop of a hat, and I would definitely support anything that any of the governments are going to do that would try to move us towards a hydrogen economy. I would give my firm support to that.

BOB MITCHELL: How would you produce hydrogen?

BRIAN DEHEER: Preferrably by renewable energy sources like solar and wind energy. Those are two, I guess, that I have read the most about and favour the most.

Since I have mentioned wind energy, I would like to add that here in Alberta I think that's something that could be capitalized on to great advantage, because there is a lot of wind in the province. Every time I walk out my door in the winter and it's windy, I think "I wish I had a windmill going somewhere, it would make me feel warmer", because in fact, if I was able to set up a windmill say in the back yard of my house and have a generator running on that, I think I would try and do that.

In St. Paul, everybody seems to have windmills, you know, set in their yards, but they don't generate any electricity, they just sit there and look nice, so I would like to have one that sits there and looks nice, but also helps to power my car, heat my home.

MODERATOR MILLARD: Other comments or suggestions? Susie, do you have anything you would like to say?

SUSIE WASHINGTON: What do you folks think about current regulations? Are they adequate? Do you want to see them improved? Are you happy with the way that government is managing them? Do you think they need to be better enforced? Do you think companies should be recognized who do better than provincial standards? What's your sort of reading on all that? Do we need to be regulating other things or not? Now I know you folks in the energy industry have an opinion on this.

LARRY CUNNINGHAM: I was thinking, I do quite a bit of reporting to Alberta Environment for Clean Air and Water, those acts, and I think they do a good job. We do send in a lot of data, and there is a lot of communication going on on what we emit, how we emit it, and how we are monitoring it.

You mentioned something about maybe recognition of somebody that's doing above that. I am not too sure if we are, or if we are not, but that is, a lot of companies are looking for PR, they want to project a good image, and if they are recognized as going beyond, it would be a selling point.

MODERATOR MILLARD: Interesting comment. Any other comments or suggestions?

AL BREKKE: Yes. I would say that somehow you could encourage incentives rather than taxes, you know, incentives somehow to use less energy such as the toll bridges that someone mentioned, or car pool express lanes where you can travel a lot faster if you have more people in your car because there is an express lane and you don't have to stay back in the traffic. Those kind of incentives, I think, are a lot better than taxes, and it is something that people relate to a lot better than sort of the penalty side.

GARY TOWSLEY: I echo that, and the incentives, especially as they could apply to public transportation.

I am recently moved to this area, but lived in Calgary the last period of time. Comments like that are much more pertinent for the urban centres.

But recently I was listening to one of the managers in Edmonton Transit commenting on the Blue Sky Day, and his position was that the transit riders should be bearing the full cost of their riding that and paying for that, whereas when I was riding the bus you would look out and consistently see almost every vehicle with one person in it and you are saying to yourself, you know, "why, I am making a contribution here by riding public transport, he is not helping or subsidizing, if he wants that privilege of driving one car perhaps he should be subsidizing a better public transit system". If it was better, more people would be leaving their cars.

TOM WHARTON: I guess another thing might be related to what the gentleman here said with respect to the use of propane or natural gas or something like that as a fuel. An incentive might be that the licence plates and registration would be less money, which wouldn't hurt. It's a little thing, but it recognizes it.

DON HENNESSEY: I am sure, in provinces like Saskatchewan where you have government insurance, you could get $10 off too, or whatever the case may be, just as another incentive. There's probably a lot of little things to do.

But there is one comment. The word "government" has come up very few times tonight. Maybe it's only in my head, but we forget that we are the government. We have got the vote, we make the government, and it's up to us. We can't put fingers on Alberta Environment, or the Federal, or the American. We are the government, and I think it still has to go back to education, that we have to start educating first.

MODERATOR MILLARD: Any other comments?

SUSIE WASHINGTON: Everybody has focused a lot on the transportation side of things because it's obvious we are all very dependent on cars, but what about things like maybe changes in building codes or, you know, household-efficient appliances, things like that? Is that something that you think we should, you know, we collectively need to be looking at? Are those important elements to consider in a new strategy, or do you think that they are so, the gains are so modest that we should be addressing some of the other, more immediate problems?

DON HENNESSEY: It's already started, though, hasn't it; the car that gets better fuel economy, the dishwasher that takes 10 amps instead of 15, the hand drill.

SUSIE WASHINGTON: You think it's already started then?

DON HENNESSEY: Well Larry already commented the free enterprise is there. You have got to keep up or there is somebody beating you to the punch.

GUY HURTUBISE: And it's certainly a selling feature.

DON HENNESSEY: And they advertise things like this. I think it's started.

SUSIE WASHINGTON: Anybody want to talk about how we are going to pay for all this good stuff?

GUY HURTUBISE: I think that was mentioned a couple of times, that there is two ways of looking at it. There is, I believe, providing incentive for the energy-efficient homes, vehicles, whatever; and possibly some type of a tax, as much as I hate taxes, on the ones that aren't or aren't doing anything about it. I think the combination of the two should almost balance each other.

And certainly, it would certainly encourage, when you are talking about transportation and living in the city, I would suspect that if I had free transportation or close to free transportation, my car would be sitting at home. There is no doubt about it. If you combine those two with a guy, a single person driving, paying a little bit of tax to cover the person that's using public transit, I think it's a trade-off.

BRIAN DEHEER: I would add to that, also, that hopefully some of the gains that are made with more efficient appliances or transportation would also result in lower costs, so hopefully that would make those alternative means of transportation or appliances more affordable, over the long run, for the consumers.

JOHN SHIRES: How about the convenience of public transportation? Any comments from people in terms of any apparent restrictions that prevent people from recognizing that as a legitimate alternative? Is it as convenient, notwithstanding the cost for example, to set that particular aside, which decides that particular issue?

LARRY CUNNINGHAM: It will never be as convenient. But I know, if I look at taking the bus to Edmonton for a trip, it costs me just as much so I take my car. If that bus to Edmonton was a third of the price, I could give up some convenience for that. But that's the way I look at it, I am ready to give a bit, but I am not going to go out and give it all.

GUY HURTUBISE: I would suspect that there would be a time frame there where the convenience may not be there, but once there is more usage, the convenience could be increased or the inconvenience decreased.

JOHN SHIRES: That's a good point. I was thinking about that myself.

And Don, just carrying on on your point one step further, that it's people that ultimately will have a significant role and significant impact on government that will eventually result in solutions to the problem, what ways do you see that presently either inhibit the public or can increase the public's impact on government to make solutions that are wise or perhaps are more just or more reasonable?

DON HENNESSEY: Well I am always going back to education, but that's the way. Like I saw some of the medical statistics on -- and where they started education in Eastern Canada, and they just kick us in the West all over because they started in school in Grade 1. Environment is now a class just like reading, writing, and arithmetic, global warming is this, and this is that, and this is it, and that's what you do. They grow up and that's part of their life.

JOHN SHIRES: Anything that you see that can have an impact on we people that are parents and taxpayers that can perhaps have more immediate impact in the short term versus the long term? What about access to information, for example. Is there any comments with regards to the government's sharing of information on issues such as air quality? Is not enough information being shared, too much?

DON HENNESSEY: Well, for myself I am speaking, not enough. I didn't even know this was happening until just tonight. I didn't. You told me.

LARRY CUNNINGHAM: What I was thinking is there is a lot of information. This was advertised, we have our libraries and there is a lot of information there, but by educating our kids, they are going to come home and be pushing it on their parents about pollution or environment or whatever, because we can't really educate the adults, they are not going to be wanting to. Their kids will import some of it.

DON HENNESSEY: Like as an example, for myself, before seatbelt legislation came in we made our kids put their seatbelts on. Well God help you if you forgot to put yours on, because they would be all over you, "don't put that car in gear" or whatever. You just didn't move the car until you had yours on too.

JIM ANDERSON: Our school systems have to be doing something right, because some of the comments I heard here this afternoon when those two classes were in here, two or three girls standing here bickering amongst themselves as to why not ride a bicycle instead of driving a car, and some of things they said, some of the statements were logical statements. I think the education is starting. It probably didn't start early enough.

JOHN SHIRES: So perhaps there is an opportunity to have some degree of public impact on the educational system that may allow for a quicker impact or a more significant impact on curriculum changes that would employ this?

JIM ANDERSON: Don's comment that in the East environment is a school subject I think is a good one, because we have to start teaching the young kids, because we are too old to learn.

JOHN SHIRES: We are too old to change?

JIM ANDERSON: We have screwed it up, now we have got to get somebody to fix it.

GUY HURTUBISE: Well I think it's very important to start them right at that level or before, Grade 1 level or before, because that's where I think kids learn the most is at that stage, and unless you started it at that young an age you lose out on an awful lot, I think.

JOE KOSTLER: One of the things that comes to mind, though, is that the young kids look to us parents, whatever, as examples or role models, and if we are not doing it, you can't say we are too old to learn, because they are going to say "well gee, my mom and dad don't do this", and it's going to take quite a while before they can really have an impact. So we in this, in our generation right now we still have to change, we still have to make some changes if we are going to be sure that our kids not only learn it, but live it. That's important.

GUY HURTUBISE: Well I think that that, you are going to get a certain amount of that, but I think the greatest impact is still going to come from the younger generation, but certainly we have to start doing something now, there is no doubt about that, and I think part of it is to make sure kids are educated. It's not always "do as I do, do as I tell you". There is always a certain amount of that going around.

JIM ANDERSON: And as the kids bring it home, the parents and the kids get together on it and it begins to have an impact.

DON HENNESSEY: You start trying to stop a kid that's right. It's pretty tough.

JOE KOSTLER: You can't argue logic, that's for sure.

JOHN SHIRES: Can I ask one more question to folks that are from Bonnyville and area tonight. What else might Alberta Environment and Energy have done to engender more interest and attention to this Clean Air Strategy session?

GUY HURTUBISE: Here in Bonnyville?

JOHN SHIRES: Yes. Where did we miss the boat? Why didn't we get more folks out?

GUY HURTUBISE: Well there is no question in my mind that there should have been a lot brighter posters that stand out, because it's been mentioned that it was certainly advertised, I mentioned that you do an awful lot of reading in a day and I guess you are sort of glancing at things, and unless it sticks out you won't see it, and I think it has to be more prominent, it has to show up, no doubt about it.

JOHN SHIRES: Just don't rely on the local written and electronic media, in other words?

GUY HURTUBISE: I don't think so.

JOHN SHIRES: More posters, more banners in town?

GUY HURTUBISE: Yes, because I think some of these papers can't put it colourful enough for it to stand out. If you could actually put a color photo in a paper like that, and it was the only one, it would stand out.

JOHN SHIRES: That's a good point.

SUSIE WASHINGTON: Maybe we should put posters in the ALCB.

JOHN SHIRES: Or any of the bingos going on tonight.

DON HENNESSEY: Even the schools. You know, when the circus comes to town, I never know until the kids come home with two free tickets. If one adult goes, kids get in free.

SUSIE WASHINGTON: Schools are getting it, schools got the information, but the point is providing flashier advertising.

LARRY CUNNINGHAM: The ad was in the Bonnyville paper, I seen it there at least twice, but it wasn't a big striking ad, it was there, you read it. I checked the paper tonight to find out the address and I couldn't in the paper tonight, I had to phone the hotels to find out where it was.

JOHN SHIRES: Thanks.

BRIAN DEHEER: From my experience, I looked in the St. Paul Journal, and I couldn't find it. I only knew about this meeting from seeing an ad in Maclean's Magazine, and tried to find out what time and where it was going to be, and I looked in the St. Paul Journal and couldn't find it there.

JOHN SHIRES: Do you think there might be interest in Bonnyville to come to other centres in Alberta if we were to advertise along the lines you are suggesting, in town, regarding those other centres, Edmonton perhaps? If we were to, you know, put some resources in that direction, do you think that might help?

GUY HURTUBISE: I don't know what, your drawing area, I don't know that you would get -- I think it's basically a lost cause for this one.

JOHN SHIRES: Okay.

TOM WHARTON: In the rural areas, there tends to be less of a concern with clean air, but more concern in our water and some of these other things. Air, in rural areas, is considered pretty healthy until we hear different. So I don't think it's a big issue. As this gentleman said, I think this crowd is indicative of the interest.

JOHN SHIRES: Okay. Thanks.

MODERATOR MILLARD: Any other comments?

Well let me say thank you very much for coming out. The group was small, but I think that the discussion was good, lots of good ideas, and they will be helpful in developing plans for the future.

If anyone wishes to make a written submission and amplify on what you have said, please feel free to do so. They should go to whom, Susie?

SUSIE WASHINGTON: Clean Air Strategy offices, and if you have picked up a folder you will find the address on the front section. It's also on all the fact sheets, if you picked up those. If you have it, I recommend you do.

MODERATOR MILLARD: Thank you.

(Meeting ended at 8:30 p.m., Tuesday, November 6th, 1990)

COURT REPORTER'S CERTIFICATE:

I, Donald G. Meyer, CSR(A), Court Reporter, hereby certify that the foregoing pages contain a true and correct transcription of my shorthand notes taken herein, to the best of my knowledge, skill, and ability.

Donald G. Meyer CSR(A)
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ORIGINAL

CLEAN AIR STRATEGY FOR ALBERTA

Transcript of Proceedings

Regional Meeting

Held at Fort McMurray, Alberta, on
Thursday, November 8th, 1990

Appearances:

Vern Millard -	Moderator
Kate Hoos - and Cheryl Bradley	Western Environmental and Social Trends
Don Meyer, CSR(A) -	Court Reporter

Transcript of Proceedings

(Meeting commenced at 7:10 p.m., Thursday, November 8th, 1990)

MODERATOR MILLARD: Good evening ladies and gentlemen. Let me say welcome to the evening. We are all glad that you could make it on a rather stormy evening, but thanks for coming out.

The purpose of the evening, of course, is to talk about the Clean Air Strategy. I have been convinced, against my better judgment, that I should make a few introductory remarks, and I have some overheads that I would like to review with you, and then we will turn directly into the presentations that have been scheduled for this evening.

After those have been presented, if we have time and I hope we will have time, we would like to have some general discussion and some dialogue in which we can have an opportunity to talk a little bit further about some of the main issues that have come up.

So without further ado, let me run through these rather dull overheads that actually Kate Hoos has prepared, and she has done a great job in preparing them, I am not sure if what's there is all that great, but anyway let's try it out and see how it works.

Let me say, first of all, that the purpose of the overheads is to try and give an overview of what it seems to me the Clean Air Strategy is all about. I think that there is increasing recognition, on the part of scientists generally in the world, that our planet is threatened by man-made emissions. There is growing evidence or a consensus that emissions must be reduced. The Clean Air Strategy encourages public discussion and the Clean Air Strategy will, first of all, identify most important issues, it will hopefully develop practical approaches for reducing emissions, and it will result in recommendations with respect to policies and programs.

The Clean Air Strategy for Alberta is a four-stage process. The first stage took place in September of this year in a workshop, and the workshop, made up of a wide variety of people, identified key issues and options.

The second stage is represented by this evening's meeting in Fort McMurray and it's designed to give input and the views of the general public with respect to these questions.

The third stage is a summary workshop which will take place in the spring of next year and will involve representatives from the various stakeholders groups.

And then, finally, the fourth stage is the final report from the committee.

Now looking at the general question of air, Clean Air Strategy, we really need to start with what are the major issues. As I mentioned before, continuing research by scientists has demonstrated that there are potential or real problems for our planet, and one can identify three main kinds of issues. There are other issues, but these are the three major ones, at least in my opinion.

The first is the greenhouse effect or global warming, and as I am sure you already know, this is caused by carbon dioxide and other emissions into the atmosphere. The gases trap energy radiated from the earth and fossil fuels and water vapour are major sources of greenhouse gases. The emissions occur in both production and the use of fossil fuels. This is an illustration that depicts the process in the greenhouse gases. The normal process results in certain greenhouse gases and in an equilibrium value, but as we increase the loading on the atmosphere, we end up with increased greenhouse gas levels, and as a consequence, the heat radiates back to the earth.

Now the second issue that relates to -- I think I am going to turn this off. If you can't hear me, just wave your hand vigorously and I will see it. If you just kind of move it, I won't see it, so you have to do it vigorously.

The acid deposition is the second kind of potential problem that exists. It's received a lot of publicity, as I am sure you are aware over the last few years, last decade or so. It's caused by sulphur oxides and nitrogen oxides being emitted into the atmosphere. The sulphur oxides occur almost exclusively from processing fossil fuels, gas that contains hydrogen sulphide, oil that contains or is sour, and coal that has a sulphur content. Nitrogen oxides occur from industrial and consumer operations, and probably the best example is when we operate our own motor vehicles.

The third major environmental problem, from an air quality point of view, is smog. It also has received a good deal of publicity over the last few years. We have all heard about Los Angeles and places in Eastern Canada. For those of us that live in either Edmonton or Calgary, we see it from time to time in terms of the yellow cloud that pervades the cities. Nitrogen oxides are a major contributor to it, and the note says it's not a problem in Alberta, but sometimes it is in Calgary and Edmonton.

Now what is being done to address these problems? Well, there have been a number of national and international research studies and agreements that have been reached; sulphur dioxide, an agreement in 1985 resulted in a plan to reduce emissions by I think it was 30 percent within a restrictive period, and that agreement is coming up for reconsideration, I believe, in the next couple of years; nitrogen oxides have been part of an agreement or a plan that was prompted by the U.N. in 1988; carbon dioxide is currently under review and has been the subject of a good deal of assessment, and you probably saw the article in, at least it was in the Calgary Herald, I suspect in other newspapers, about the Geneva conference just recently with respect to a meeting of 700 scientists that were looking at the impact of global warming, and of course there is all the research activity that's going on in association with that.

Another question that is apropos is how does Alberta fit into this total picture? Alberta is a major producer of fossil fuels. In terms of the Canadian scene, it produces 83 percent of the gas that's produced in Canada, 80 percent of the oil, and 44 percent of the coal. Partly, and maybe primarily because of that, Alberta's share of the emissions is greater than what would be expected from our share of the population. Our population is roughly 10 percent of the total, whereas our share of sulphur dioxide emissions is about 15 percent, nitrogen dioxide and carbon dioxide about 22 and 23 percent, and those latter numbers primarily from the energy industry plus the other activities.

So on a per capita basis, Alberta has the highest per capita emissions of certainly nitrogen dioxide and carbon dioxide, but we also have to remember that about 75 percent of the oil and gas that's produced in Alberta is sold outside the province, either to other parts of Canada or to the United States, and therefore one can argue that, in part, the emissions take place in Alberta on behalf of other consumers elsewhere.

Canada's share of the total world CO/2, carbon dioxide emissions, is 2 percent, so it's a relatively small percentage of the world's total, which of course has a direct relationship to the question of greenhouse gases and global warming, and Alberta's share of that 2 percent is something approximating a little less than a quarter.

Another aspect of this whole question that we have to be conscious of is that for Alberta, fossil fuels are a major industry in the province. The industry accounts for about 15, $16 billion on a value of production basis in 1989. That resulted in about $2.4 billion going to the Alberta treasury on a royalty basis or as a result of royalties, which is about almost a quarter of the provincial government's revenue. So from the economic point of view, there are significant features involved.

Now looking at the question of these air or these emission problems, and I will go back and restate them; the greenhouse effect or global warming, acid deposition, and smog, these are questions that involve all of us. We always have a tendency I think, in terms of environmental questions, to really assess the blame on other people, but this is an area where we are all involved. In terms of responsibility, the facts suggest that carbon dioxide and nitrogen dioxide are really distributed on a one-third basis for the energy industry, is a major contributor; other industrial operations; and the public, which really means you and I as individual consumers in the province. So we account, individually, for about one-third of those emissions, or looking at it from a different point of view, about one third of the problems that relate to these three major issues, and so the solution rests in our camp as well as in other camps.

An important question is what do we mean by "clean air"? A kind of definition that has been used over the last few years, I think, is that it's recognition that air may contain contaminants, but the level of them has to be less than what would cause adverse effects upon human health, vegetation, and materials. And that's been the basis, I think, for standards that have been established, and regulations, and so on.

But if you have regard for the long-term effects of these emissions, thinking in terms of greenhouse effects and the buildup of gases, greenhouse gases in the atmosphere, obviously there is something more than just the short-term question of whether or not air today may cause health or vegetation effects, and what we really have to put into the equation is whether, on a long-term basis, the emissions may cause serious problems for inhabitants of the globe.

If you make the assumption, and I know that there are some that wouldn't accept this assumption but for argument's sake let's accept the assumption that Alberta has clean air, even if that is true, that doesn't mean that we don't have to do something for the future, because the scientific research that's going on suggests that while Alberta may have clean air emissions under this particular definition, that the emissions are contributing to the long-term buildup of greenhouse gases, etcetera, and over the long pull they will have very serious effects on all of us living on this planet. And of course it doesn't mean we that are living today, it also means our children and our grandchildren. So it has moved from being a current problem to a long-term problem and consequently, if we are going to avoid those long-term problems, I think the evidence is there that we need to reduce emissions.

Now the question is how can we go about reducing emissions, and there are four basic alternatives on a very broad basis. The first, of course, is to produce less energy. If we shut down our oil, conventional oil industry or our gas industry or our oil sands, I guess that's more pertinent to Fort McMurray, or any one of those, would certainly reduce emissions.

We can individually use less energy. We can all drive less, we can heat our homes to a lower degree, and we can all do it by those means.

We can use energy more efficiently, both in industry and on a domestic or residential basis, individual basis.

And we can shift to non-polluting energy resources such as wind or solar, etcetera.

But how can we, as individuals, reduce emissions? Well first of all, of course, that's the whole reason why we have these regional meetings. We want your suggestions, we want to see what you think about this problem. If we stand back and think about it, we would probably all agree that education is probably a major factor in terms of tackling the problem, and then one runs into the question of how do we achieve education to obtain the results that we want, and I guess a general kind of question that I would throw out for consideration is how do we become convinced, as individuals, that we must change our lifestyles, because the impacts seem so remote to us.

We were in Bonnyville on Tuesday and the people there were saying "well, you know, we have clean air, and maybe you people in Calgary and Edmonton don't have, but we are okay", and you people in Fort McMurray might not feel quite the same way, but it's this relative problem that's before us.

Finally, we need to think about what policies and programs are required for an effective Clean Air Strategy. Well again, first of all, your suggestions will be very helpful, and what we have done in terms of this overhead is simply identify a few that might be considered. Now I know there are several people making submissions tonight, and I am sure they will contain some suggestions as to how this can be done. Just for the purposes of promoting discussion, we have listed a few, such as new standards; limiting total emissions in a particular area, an airshed area for example, putting a cap on the amount that might be produced for that total area; one might develop or establish incentives, financial incentives, to develop new technology; one might change the current financial incentives, which today tend to perhaps encourage the use of energy, to financial incentives that would discourage the use of energy; and, of course, we can expand research.

Well these, ladies and gentlemen, are just a few suggestions to foster our thinking. There is nothing sacrosanct about those particular ideas, and what I would like to do at this time is to call upon those that have indicated a desire to make a submission and to hear from them what they would propose, and then if we have time at the end of the session we will have some discussion, and as I say I hope we will have some time so that we can have an exchange of views between all of us and explore some of these broad issues.

The rules of the game are that the submissions would not be more than I think it's 15 minutes, isn't it Cheryl?

CHERYL BRADLEY: Right, that's right.

MODERATOR MILLARD: So we would ask you to stay within that kind of restriction, and of course the purpose is to get your views out in the open for discussion and then to have enough time left over this evening to be able to engage in a general dialogue.

Thank you, Kate.

Now if I could call upon the first person, Pat McInnes?

PATRICIA McINNES: I sat down with pen and paper for almost four days trying to start this presentation, and basically I can see why the government asked for our input, because we seem to have gotten ourselves into a heck of an awful mess.

I kind of disagree with everybody about the quality of our air, I don't think it's really that great, and in emissions we seem to kind of have climbed a little bit there on our nation's scale. The quality of our air is affecting our trees, our lakes, and most of all the air that we breathe, and it's now time that we take affirmative action and kind of get rid of the verbal pollution. Many of the problems in our province that I would like to address I don't really fully understand and know, but I do know about some that occur here in Fort McMurray.

The first one I would like to address is effective air quality monitoring. Unfortunately, right now, no one in this room can tell us what our total hydrocarbons have been for the last 18 months, because that particular part of our monitor has been down for a total of 169 days in 18 months. That's almost ten days per month that we have had no readings.

During March of 1989 we had total hydrocarbons that peaked at 16 and went for three days, a total of 62 hours, at 10 ppm's or more. Now we don't have a standard for that here in Alberta. It is rather high. They contain things that are not, definitely, good for us, and unfortunately even after an article in the _Today_ newspaper, nobody seemed to be able to explain to us why those readings occurred, what happened, whether it was emission from a vehicle parked close to the monitor, whether it was a malfunction -- it definitely was not a malfunction, we checked that part out, we called five times before we got an affirmative answer on that, that the technician had checked out the monitor and it was working -- and I think things like that need to be addressed. In the last three months, although it has just recently been fixed, we have had no nitrogen readings, none whatsoever. That part of our machinery just shut down totally.

That in itself is not too bad, except for the fact that we have really had some kind of high levels in ozone readings; not the good ozone, that's the stuff that's up in the sky, the stuff that's down here, down where it affects us in the way we breath.

Now in 1989 we had one month where our reading in 24 hours was over the standard 100 percent. On two of those days, the readings were two times the acceptable minimum -- maximum, sorry, we wish it was the minimum. Okay. In 1990 we had two months that were over the 24-hour standard 100 percent of the time, one month at 90 percent, but what looks even worse is that this time we had 22 days that were two times the allowable maximum for ozone, and we also had 14 hours that were exceeding the hourly standard.

Now ground-level ozone is one of those things that can affect your health, can age your lungs, can cause stress in trees, and stress in me too. I think, actually, that's one thing that maybe has to be looked at, is that the monitoring has to be done. If the monitoring is not done effectively, we have absolutely no way of studying the trends of the air in this area, we have no idea of how to correct it or how to help it.

Some of the other ones that we had really good down times in were 95 days in hydrogen sulphides, kind of works out to about five days a month; then we had 126 days in coefficient of haze, and only 21 days in sulphur dioxide, so we were doing pretty good on that one.

Now one reason I would like to actually stress more on the monitoring is that our monitor hasn't even really been picking up the readings that well. If we take and talk to a few trappers and you take a look down the Clearwater, and I have lived in the same apartment block for six years now and I can get up in the morning and I can look across the Clearwater and the air or the fog, as it rolls in, has been white, for the last two years that air has been blue. Trappers coming in off the Clearwater River into the city hit a wall of blue. Some of these people work out at the plants and they know that it's not just nice blue air, somebody painted it, it definitely has an odour. It's not taking that little turn down the Athabasca River, it doesn't want to go that way, it goes down the Clearwater and then it disperses out into town.

Now this problem has been addressed by Environment Alberta and they are moving their monitor, but it's only because of one thing, and that's a few people who call in and complain when the air is bad, and they know which areas are coming in.

That's one part, too, that -- I hate to jump around like this but we just get so riled up sometimes.

I took a look in the phone book last night just simply because I could never find the number for Environment Alberta in the phone book, that 1-800 pollution hotline that everybody says they can phone in on. It's never there. Now I was advised last night by Jerry Lack that it's in the front page of the emergency numbers in the phone book. Now I can see the report of poacher, that's fairly understandable; the kid's help phone, that was a good one; forest fires, I can understand that. It comes under environmental emergency.

Now in Fort McMurray, most people don't consider an excessive amount of odours in our air an environmental emergency. They consider that a toxic spill on the highway, a major gas eruption that's ignited, but they really don't consider that a hotline that they can phone in and say "our odours are really bad in town, they are affecting the way we breathe, they are causing disturbances, they are not making me feel good, they are making me vomit and they are making me throw up." There is no way you can do that, because people don't understand that. I think we need better advertisement of that number.

Now sometimes industry has a feeling that we are kind of chasing them down, and quite honestly, we are not. They quite often don't understand that sometimes we are the biggest help they have got, because without people who can smell those odours and detect them, they have no way of knowing how they are affecting people in town, how they are affecting the plumes because they don't disperse the way they think they are supposed to. We are not out on a witch hunt to get them, we are out actually to help them, they just haven't realized it yet, and we hope that that's one thing that, through better publication and better information to the public, will happen.

The other reason, and the other thing that I would like to stress, is that we definitely need more affirmative and aggressive action. Our laws now are far too discretionary, and they really leave it up to the Minister on whether anyone will be fined or will not be fined.

The Federal Government was asked, last year, if they were contemplating a list like the United States of the nation's air polluters, and the answer was no, because the companies wouldn't appreciate that. This type of attitude has helped create the problem we have now got.

Success stories of stronger actions have resulted in less emissions at Inco and cleaner air in Los Angeles, just to name two. Now Inco still operates quite successfully, and industries still flourish in L.A., so why are we afraid? I really fail to understand that point.

On October 3rd -- this is one other thing I would like to address is health problems -- now on October 3rd the inner City of Calgary released alarming statistics on the number of asthma patients in Alberta which are particularly being attributed -- partially being attributed, I am sorry, to the increase in air pollution, which is one of the things that does trigger asthma.

Dr. David Bates of the University of British Columbia has completed studies of SO/2 and O3 to respiratory problems. Although the energy industry doesn't like to be the villian in health-related problems, the possibility is there, and high incidents reports of hospitalization due to respiratory problems and high pollution emissions sometimes seem to go hand in hand. More people in the Fort McMurray and Fort MacKay area are experiencing respiratory illnesses, which usually has seemed to occur in times when we have had high emissions, and one thing that's really frightening is that there are more children developing asthma problems.

I know that some of you are going to sit there and say "God what an alarmist". You know what? I, like everybody else around here, really likes to say "I told you so", but you know what; in this case, I sincerely hope like hell I am not. Thank you.

MODERATOR MILLARD: Thanks. Jim Rogers?

JIM ROGERS: I have a picture for you to look at. I have a photograph. I will just hand it around and then you can take a look.

The thing that's interesting about the photograph on the magazine is it's just indicative of a process that's subtly happening. If you look at the photograph, it's a very nice picture of a coyote standing under a tree. If you look a little bit closer at the tree, you realize that the tree is actually dying and in some fairly advanced state of decline, but the majority of people will walk by a whole forest that's in some kind of distress and maybe not recognize it because they don't know what to look for, or they are not acute to looking at even the trees in a sophisticated way.

I am here as a representative of the Trappers' Association. We have some 10,000 or 7,000 members across the province who are out under the trees and around in the environment throughout. We are a stakeholder group because we regard ourselves as a part of the ecosystem and in a relationship where we are not only dependent on the welfare of the animals, but we have taken up an occupation like that because we wanted to be involved with the animals and within the environment, and there is some substantial amount of a sacrifice in standard of livingm and in some other options that people have undertaken upon, at their own desire, in order to live in the bush and amongst the animals.

What we are seeing is a very wide-spread stress throughout the environment, and a lot of problems with particularly the trees, but different animal species. Amongst the animal species it's quite difficult to detect, because they are all inclined to have a natural cycle of decline, almost one for one. If people don't catch the animals, the animals overpopulate, and within two years they get sick and die. We see this routinely throughout the environment, and you get to kind of be able to judge. When it looks like there is a lot of animals and it looks like they are really prospering, the trapper immediately gets worried, because if you don't cut down that population they are going to come to a very nasty end, and the very nasty end is usually starvation over a period of four or six months in the wintertime.

What we have seen, then, is some strange things happening. As you start to stress the environment with a number of artificial and man-made influences, then you allow the animals to go overpopulate, they make another additional stress.

We are doing things to our planet that nobody would want to do to any kind of an experiment that they and their family were going to be living in and we know that, from what we have been able to do with modern medicine and what we have been able to do with modern transportation and some limited mitigation within our antagonistic, legalistic kind of a process has allowed us to expand our population probably four or seven or ten times more than what our planet would sustain if we didn't have this technical communication kind of skill. So we are moving into a position where we are really injuring the entire global system. Now, this year, last year, these impacts are progressing in a way that we don't understand even what's being taken out of the ecosystems or what the effect is.

For somebody to come along and say we have got ten years, that is absolute lunacy. We don't even have one year last year. We have got to start making some real basic changes to our system and our society and the way that we are seeing ourselves and what we are doing on this planet starting off as quickly as we can. There is no use waiting until the system fails and then try and come up with a plan or an emergency response. If we possibly can, we have to try and anticipate where the system might fail, what kinds of steps can we do or take to reduce the impacts, and how would we stage those reduction things through our system. Maybe, for example, saying if it looked like the atmosphere was, in fact, self-propelling itself into degradation, how many things could we remove that would be optional impacts? The obvious aim is that I want to sustain my own life, the life of my family happily, and some kind of a community of friends that I relate to. Beyond that, I am ready to negotiate everything. And that's just speaking for me. Us trappers are a fairly compromised group, we have chosen to go and live off in the bush in a little cabin just to be near the squirrels. You can figure that out yourself.

I just mention a couple of things that have gone extremely wrong. We have been accepting what science and industry have been telling us, and we were told that acid and acid in the air would be neutralized, that acid rain wasn't a problem.

Then we discovered that, actually, there is a factor about -- that is substantially bigger than rain, that's acid air, that's SO/2. It's a gaseous substance and it's inclined to dryly adhere to vegetation, and it washes out, but it washes out with rain or precipitation into the ground around trees, particularly trees in a row across a field. Here's an all-new impact that we never even knew about until six months ago. Maybe industry knew about it but they weren't saying, maybe government knew about it but they didn't want to panic the public by letting them know.

So then we were told that if this acid goes down into the subsoil it will meet with a carbonate kind of subsoil and that will neutralize it and everything will be all right, and now we have discovered that that actually goes down there, creates CO/2, and produces a whole spectrum of elements, most of which are toxic to plants and the little biota that live in the soil and break down things to make them so that they can be utilized as nutrient by other life forms.

We were told that the pulp and paper industry just put their sludge in a big pond, hot, stirred it around, and then the amount of dioxin that came out miraculously reduced by ten times. We now discover that PCB or dioxin is, in fact, a volatile compound at those kind of temperatures, the stuff has been going into the air, and our whole ecosystem is saturated with it, including all the food on the store shelves.

We have had another sort of a little setback. Pat brought to our attention these problems with monitoring, and that sounds sort of, she says it would be generous. That was pretty good. Well the fact is industry pretty well knows when they are on spec and when they are off spec, and maybe the equipment fails just when they are going off spec, but one way or another we have had a very elaborate study done on acid rain deposition in the province, and it suffered two terrible sort of procedural problems. One, it relied on data generated by industry to tell us how much acid there is out there, and the other one, industrial people were largely involved in designing the studies that were put together and were carried out.

So the scientists, having carried out this 5 or $7 million process, stood up and to a man said "well I did the best I could given the circumstances and given the terms of reference of my part of this study", an extremely sad situation for the public, and particularly distressing when you realize that time is not money. We are not fighting for time to try and waste it, we are fighting for time to try and get it back.

I wanted to offer a few insights or advices to our government and the like. Heaven knows trappers are not scientists, and so therefore they don't live on the tenth storey of a brick building and not know a damn thing about the environment so who would care what we said, but it would appear that there are a bunch of other governments that are in the same condition or situation as Alberta. Generally they are regarded as OPEC, but there are others that are heavy producers and they should be concerned about aspects of global environment quality and air quality, and we should be making a subset communication with those people to try and come up with research or information that can be shared and thereby get more results for our buck, so to speak.

I would recommend that the public is really willing to help in whatever way they can. We have seen, you know, the acceptance of the blue box kind of an initiative when, pitifully enough, you have got people whose children are dying of cancer, whose cancer is sweeping through our society. There is some possibility that we could face, say, a flu like 1918 in the spring of next year, or a subsequent year, and these people are being led along the path that, well, we have got ten years, don't really worry about it too much, industry is concerned, and the like.

The fact is that most of industry's uses of our environment are much more highly-tolerant to pollution than are human beings, and across our society we can draw a line, sort of the 10 percent that would be most susceptible and move up by an increment. Some of those people are probably already gone, as are some others within our society.

I have a problem with we have guaranteed a freedom of the press but we haven't obligated the press to freely treat the world and accurately present what we are seeing out there, so we are being led to believe that it's the editor's prerogative to smear one candidate in an election and boost another one and that's freedom of the press. Well, in fact, we have got an electorate out there that that press has an obligation to, and it's not a matter of the discretion of the editor as to whether they want to disturb the public by offering them information or not.

Research into subterranean dwellings or subterranean utilization for factories or other things like that, we have, I think, got to start backing off the surface of the planet a little bit. Our heating costs are very high here on the surface, and the amount of carbon dioxide that's converted to oxygen by an asphalt road or a building or a parking lot is quite minimal. I gather that I am kind of running out of time here, so I will sort of speed along.

There comes a point where we may have the money to buy a bigger and bigger house and to heat it and to carry on all kinds of elaborate prerogatives, but at the same time, or in short order, we should be looking at that smaller house somewhat like the smaller car, and having a price tag or an emission tag on us as individuals.

It's fine for industry to say "we produce a massive amount of pollution and we are doing that, really, on behalf of the public", but then you are looking out there at individuals in the public that we are going to tag that emission onto and say here's this single S.O.B. who has got a 30,000-square-foot house, flies his private jet plane, likes to, you know, blow off CFC's for recreation or whatever, well that's all his prerogative but he drives a small car with a catalytic converter because we have got laws that focus on that particular piece of human behavior. I would suggest that it would be a very good idea that, if there isn't going to become some kind of a tagging like that on the full carbon utilization of the individual, at least something like that should be kicked around, and people like the Petroleum Association should recognize that a carbon tax could be, you know, in the wind somewhere, sometime.

On the matter of CFC's and halons, we have a major problem. It's apparently a discretionary use if an industrial or military user wants to install a system that will deliver thousands of pounds of halon upon a false alarm in a fire system, and that's seen to be particularly annoying, and I don't know what the alternatives are, but they should be examined and there should be some. If the only thing we can do is a negative incentive, make it negative.

The concern is that if the

population is aware of an examination of themselves as a polluter, emission source in the world, that they will then start looking at their impact and trying to limit their impact on a per-person basis, and heaven knows we have got a big problem coming up when a lot of the people on the planet discover that they are going to inherit our filth and their impact is almost nil.

I would recommend that somebody give some thought to those possible things that could go wrong or be discovered to go wrong. I will give you an example. There has been a, somebody has done a gross carbon examination and discovered that there is about, oh, one-third of the carbon dioxide going into the atmosphere has somewhere gone out of the atmosphere and they are not able to account for it -- I believe I have that in my pocket -- a kind of a marvelous, billions of tons of pollution just vanishes, and that's from September the 20th, page B6 in the Journal.

And this is the kind of thing that really is quite disturbing because it demonstrates, again, that we don't know what's happening out there. We don't know if there is a finite absorption there that is being saturated, that suddenly things may change quite radically without our being aware of the fact that there was a change happen.

MODERATOR MILLARD: Jim, I think your time is running late.

JIM ROGERS: You certainly have. Thank you. I will save them for the next round.

MODERATOR MILLARD: Don Klym?

DON KLYM: I am not sure but that there is a pattern developing. I am following the mad trapper. He was in front of me at the legislative review, but enough about that.

I am Don Klym, I am the Manager of Environvmental Control at Suncor. I have been a resident of Fort McMurray for some 20 years and employed at Suncor for approximately 17 years, and most of that has been in the area of land reclamation.

Suncor is a national integrated petroleum company. Its Oil Sands Group has operated in the Athabasca region for more than a quarter of a century.

The Oil Sands Group mines, extracts, upgrades oil sands to produce synthetic crude oils at its lease in north-eastern Alberta.

During the time Suncor has operated in this area, we have made it a priority to be a good corporate citizen. We have a stake in the development of the Athabasca Oil Sands and at the same time we are committed to environmental protection.

Suncor believes we can provide a

valuable contribution to this Clean Air Strategy because of the experience that we have accumulated as a pioneer in the oil sands industry. We are also concerned, as a business enterprise, of the wide-reaching ramifications of future legislative initiatives with respect to atmospheric emissions.

A Clean Air Strategy is a significant step in the evolution of environmental legislation in Alberta. Suncor has already participated in some key legislative initiatives. We, therefore, see today's meeting as a continuum of basic premises and positions that we have already put forward.

In '87 and '88, our input to the Environmental Enforcement Review Panel was that some minor adjustments to the enforcement system had to be made, but fundamental to any legislation was that (i) the environment must be protected, (ii) the rules must be enforceable, that is for the regulator, the inspector, and they must be workable for the operator, people like us, and (iii) the public must be informed.

At that time we took issue with the existing air quality standards and their applicability, mostly their applicability. We maintain that the standards should be more realistic and achievable without creating any undue hardship on industry. Furthermore, we stated that if standards are to be used for establishing source emission limits, then they must be applied equitably.

Recently, in October, last month, we presented our views on the proposed Alberta Environmental Protection and Enhancement Act at a public meeting similar to today's. In our assessment, we stated that the legislation has the substance to protect and enhance the environment, but that its enforceability has yet to be tested and the doors were wide open to the public.

At that time we expressed our concern with the nature and the extent of public involvement.

We stated that public involvement is consistent with Suncor's approach as stakeholders in the region. We share, with the public, a common objective of having a protected environment because we are part of that public.

However, corporately speaking, we must balance that objective against our viability as a business, and the public has to balance that objective against its desire for resource development, energy security, and employment, which of course affects their quality of life.

We suggested that shared responsibility of environmental resource management also means sharing financial burdens.

So the preceding views and concerns can also apply to the Clean Air Strategy as we perceive it today. So we, therefore, would like to provide some strategic considerations to this public forum which we believe could advance the formulation and the implementation of the strategy. So let's look at some strategic considerations.

In development of any strategy, be it a corporate strategy, a Clean Air Strategy, or whatever, one must take advantage of the opportunities, you have to identify the opportunities and take advantage of them, and manage the threats. You will always have threats around. One must also build on the strength whilst not forgetting the weaknesses.

In Alberta, the most obvious and greatest opportunity is the state of our air quality. We have an extensive data base of emission inventories and research on environmental effects, and we have already heard about the A.D.R.P., the Acid Deposition Research Program, and locally the Air Quality Task Force report, which was completed some three years ago for this region, are two programs that come to mind. Therefore, we believe that air quality in Alberta can be generally regarded as good. I guess it's open to debate. I said "generally". We have a few hot spots.

Probably the largest threat is the uncertainty of sustained economic development given the depleting non-renewable resources and higher environmental standards, that is probably the largest threat in the Province of Alberta, and then you compound that threat with the fact that Alberta emissions, in the global sense, must be addressed as well. We have heard about the longer-term problems vis-a-vis CO/2 emissions into the atmosphere, global warming.

So as we indicated in our submission to the Enforcement Review Panel in 1987, we believe that the current legislation, with the proposed overhaul, will probably be the greatest strength as far as the system is concerned. However, the enforceability of it and the implementation could be the greatest weakness, and we will allude to that later on.

Therefore, it is refreshing to see that the Clean Air Strategy deals with all pollutants, the way we understand it it deals with all pollutants from all sources in the Province of Alberta, at a time when it is not too late, and Jim may disagree with that, at a time when it is not too late to act for clean air issues in terms of direction, policy, and enforce control strategy.

Therefore, we would like to state Suncor's position on what we believe are the key strategic planning principles.

Number 1 is priority setting. It is only human nature to be concerned about personal well-being first and foremost, and we heard about health effects. Health and quality of life issues must be addressed relative to ambient air quality, that's number 1. In the Fort McMurray area, this can be exemplified by the proliferation of odour complaints in recent years. People are demanding to know what the health effects of industrial odours are moreso than demanding what CO/2 emissions contribute to global warming.

Number 2, environmental resources. Our environmental resources that we personally utilize in this area are of personal concern, so therefore regional-scale air quality and air emission must be addressed.

And thirdly, albeit selfishness may be implicit in the preceding priorities, we still must be aware of the impact of our activities on other regions and, of course, further abroad, so that will be the third priority.

The second strategic consideration would be we must have a logical process taking place. To establish an appropriate clean air control strategy, a defined sequence of events must occur:

Number 1, the inventory of atmospheric emissions, that's the quantification and characterization of those emissions, must take place;

Secondly, the understanding of atmospheric processes which transport these pollutants and transform them and deposit them has to be conducted, it has to be understood;

Then, of course, the assessment of environmental and health impacts;

Fourthly, from that we establish environmental standards;

And lastly, the development and implementation of the control strategies based on the standards.

We would like to make some comments on the standard-setting. Standards should be realistic, that is they should be based on technical validity, not emotional anxiety. Standards should be equitably applied on an airshed-to-airshed basis, not across the board in the province. Standards must be enforceable. This means there has to be some relation to source so that we can properly licence sources. This is, today, a recognized deficiency, and hopefully the proposed environmental legislation will be addressing this. It's been identified as a deficiency.

Another consideration, good science and education, and there is a reason why I put those two together; they are interdependent. Still fresh in our minds is the Medical Diagnostic Study of the A.D.R.P., the Acid Deposition Research Program, that was completed a couple of years ago, and the diagnostic study took place, of course, in Southern Alberta in Pincher Creek. This was a world-class study and it's a study, its results were not accepted by the public even though the results were positive, or at least there was no correlation in terms of health effects in that area to other reference groups. It was not accepted.

Good science is a prerequisite to legislative requirements, but unless the public understands the technicalities of an environmental problem, the scientific effort may go unrecognized. Translating technical study findings into layman language is only one facet of the educational process. The entire process must be addressed, beginning in the school classroom. The development and instalment of an environmental package jointly with industry into the school curriculum in this area, the Fort McMurray schools, is a positive example of this.

Our reference to science also covers the spectrum of source inventorying to environmental impact assessment to pollution control technology. We recommend that government industry authorities be established to develop inventory and impact assessment strategies and the appropriate quality assurance systems. We heard about monitoring problems earlier. The initiative by the Canadian Petroleum Association to review inventory methodology is an excellent starting point.

Next consideration, the regulatory process. How is all this going to be converted into regulation? It has already been recognized, and adopted to some extent as policy, that global atmospheric issues can only be solved in concert with the global community, and we all know about that. We stress the importance or the significance of this in terms of business viability for enterprises such as Suncor, and of course competitiveness in the market. Therefore, we strongly recommend that an intergovernmental and international infrastructure be established to deal with the likes of global warming and ozone problems, and from the perspective of the Clean Air Strategy, we believe that these infrastructures are being enhanced, and we fully support these.

Locally and regionally, air quality issues can be dealt with through committee infrastructures where all stakeholders meet, discuss, and act on their concerns.

North-eastern Alberta is on the leading edge of stakeholder participation in managing air quality issues, and I have to refer to the Regional Air Quality Co-ordinating Committee, which has been in operation for a number of years now with some significant successes.

Requirements for atmospheric emission reduction global-to-local scale must eventually translate into regulations. The proposed Alberta Environmental Enforcement Enhancement Act, we believe, makes provisions for this. It will have to take time to happen.

The last and probably most critical consideration in the strategy development is implementation. The implementation of the Clean Air Strategy, and eventual emission reduction, will have significant economic impact on industry and all of society, and this is a given and we all know this, this process will be publicly driven. No debate on that.

In our introduction we alluded to our endorsement of public becoming involved in the management of environmental resources because this has become a way of doing business, but we also said that shared responsibility means sharing in the cost for future environmental controls. We believe a partnership already exists because the oil sands industry has, to date, provided its greatest returns to the public in terms of tax revenue of various kinds, wages, and benefits, and so forth. Shareholder returns are relatively insignificant by comparison.

Government-industry cost sharing in research and development programs for pollution control technology is not a new concept. A current example is an SO/2 reduction pilot test taking place at Suncor which is a co-operative effort among the Federal Government, Alberta Government's AOSTRA program, Union Carbide, and our company, Suncor.

However, control technology is much more expensive than research programs or emission inventorying. Costs will be variable dependent on the ultimate international and national and provincial accords, as well as local air quality standards. Retrofitting or new ventures would be subject to different costing scenarios. Economic viability, not just with the industry but for consumers, will be a threat.

Therefore, Clean Air Strategy and all resultant legislation must consider this far-reaching ramification. Suncor's position is that economic instruments -- and that seems to be becoming a buzzword -- economic instruments must be available so as not to threaten our business viability, and most importantly, the quality of life for Albertans.

Another initiative by the C.P.A.,

the Canadian Petroleum Association, which is not xxxpeculiar to our industry which is also being considered in the United States, is the review, they conducted a review of the feasibility of using economic instruments. Specifically, the concept of trading clean air permits is not that far-fetched, where economic viability is maintained for all the operators in a defined airshed. You do this by negotiating the most cost-effective reduction plan for individual operators, but yet achieving the airshed reduction standard or target.

Here in Fort McMurray, an opportunity currently exists for the oil sands industry. It has been indicated by the Alberta Environment that, based on the proposed interim loading targets for sulphur dioxide, our airshed here cannot accommodate all the emission sources. We haven't seen the target yet, but this is what we hear. Syncrude and Suncor are current operators with SO/2 emissions in the area. OSLO is on the verge of plant design and construction and decision. The next step in this process would be to define a socially-responsible level and a schedule of SO/2 reduction for this airshed and then to negotiate, with all the stakeholders, the best economic instrument for achieving this reduction.

In summary -- I hope I have

time -- in summary, Suncor views the Clean Air Strategy as a positive direction and approach for the benefit of all Albertans. We fully support it and we want to be part of it.

We have re-examined some of our concerns with evolving environmental legislation in Alberta relative to Suncor Oil Sands Group. Public involvement and enforceability of clean air standards were two primary issues. We suggested that all Albertans must have shared responsibility and financial implications of increased environmental control.

We voiced some strategic considerations such as priority setting, using a logical sequence, complimenting good science with education, how the strategy should culminate in regulation, and financial implications of implementing the emission control.

So in our final summation to this public forum, we would like to stress that the area of clean air regulation has the greatest repercussion on industry and operations such as Suncor, relative to other environmental legislation, and we -- I am referring to water pollution control, waste management, and the likes of the other things, land reclamation. It not only can jeopardize industry viability but with it, the interests of the public at large. We therefore draw attention to the need for cost-sharing mechanisms to manage all our stakeholders' expectations through the 1990's and into the next century.

Suncor would like to continue to participate in the evolution of environmental legislation and sustained economic development in Alberta. We appreciate today's opportunity to input to a most important and exciting initiative as the Clean Air Strategy.

I would like to make one more comment to that, that it wasn't our Public Affairs Department that prepared this for me, these are my own ideas endorsed by Suncor management, so I would like to put a qualifier on that in case some of you were wondering. Thank you.

MODERATOR MILLARD: Thank you. Chief Dorothy McDonald? Bruce Friesen of Syncrude?

BRUCE FRIESEN: I am not sure if I can follow Don Klym's philosophical presentation. My name is Bruce Friesen, I am the Manager of Environment Division at Syncrude, and my comments this evening are on behalf of Syncrude.

I want to express, on behalf of Syncrude, our appreciation, Mr. Millard, for bringing this process to our region, and the opportunity for us to make our comments in a public forum.

We believe the Province of Alberta will gain substantial benefits from a carefully-conceived and developed Clean Air Strategy. Such a strategy will provide a strong foundation for both provincial regulatory practices, and also national and international air quality discussions. Alberta Energy and Alberta Environment are to be commended for the initiative they have taken.

Syncrude is pleased to have the opportunity to contribute to the development of this strategy.

Just a couple of quick comments describing Syncrude. Syncrude currently produces sufficient synthetic crude oil to satisfy more than 13 percent of Canadian requirements for petroleum products. This builds on your comments, Mr. Millard, about the magnitude of Alberta's energy production. North-eastern Alberta alone has a major role to play in supplying Canadian energy needs, and the emissions in this region relate to that supply of Canadian energy needs.

With approximately 4,600 employees, Syncrude is the largest private-sector employer in the Province of Alberta. We are a major client of contractors and suppliers of all kinds throughout the province and the nation. In an operation the size and complexity of Syncrude, concern for the environment is essential. Syncrude has established, as corporate policy, that we will do no permanent harm to the environment as a result of our operations. We back up this corporate policy with a solid program of management control of environmental performance, and it's in the context of this corporate commitment that we frame our comments this evening.

There are three considerations which Syncrude believes are fundamental to an effective air quality strategy:

First, there must be a region-specific scientific basis for each regulatory requirement;

Second, there must be technical and economic assessments of the feasibility and practicality of each regulatory requirement;

And thirdly, we would like to see an air strategy based on comparison of alternative fuels that includes an understanding of, and use of, emissions estimates over the full life cycle for each fuel.

A high standard of environmental stewardship is a clear responsibility of all citizens, including industrial organizations. Syncrude has invested over $900 million in processes and equipment the primary purpose of which is environmental protection. We fully expect to make further investments to ensure environmental protection. As social norms evolve, requirements are better understood, and technologies are further developed.

Our knowledge and understanding of environmental issues are increasing rapidly. New concerns are being identified and explored. As a society, we are being challenged to respond to these changing, increasing demands in a measured and responsible manner. As a society, we must allocate funds wisely or risk the economic future of our province and its citizens.

Syncrude recognizes that its operations are a major component of achieving satisfactory air quality in Alberta. Our past expenditures, and expected future expenditures, are understood in that context. The three considerations on which our comments are focused are those which we consider the keys to ongoing wise development of Alberta's resources.

So turning first to region-specific and scientific basis, the environmental issues are evolving very rapidly, in many cases outrunning the scientific foundation or even support. In other cases, there is strong justification for action now. Frequently, scientific understanding allows identification of regions where strong action is appropriate, and areas where a similar level of effort would not be cost effective.

An excellent example of region-specific action is the plan for management of NOx and VOC, volatile organic compound emissions, now being finalized by Canada's federal and provincial governments in which there is clear demarcation between those geographical areas at greatest risk and areas of lesser concern, and Mr. Millard touched on this earlier.

Syncrude is a major point source of SO/2 emissions, one of the top ten sources of SO/2 emissions in Canada. We recognize the onus is on Syncrude to ensure these emissions do not harm the environment in the area around our plant. Since 1975, prior to the startup of our plant, we have had a program of environmental monitoring, including regular monitoring of lichen species diversity, vitality, and chemical composition, using infrared photography to assess vegetation stress. Last summer, Syncrude conducted a major field program searching for possible trends in soil acidification in our region. This program included the use of an innovative technique of tree wood ionic ratio analysis to identify trends in time or space adjacent to our plant. The results of this work will be shared with government and the public once analytical work has been completed.

We are committed to continue

scientific assessment of acidification in our region and we are looking forward to future partnerships with government in an expanded scientific program. Syncrude considers this scientific activity, and the resultant understanding, an essential precursor to regulatory action in our region. That said, if action is required, Syncrude fully intends to execute the necessary actions.

It is worth placing this in context. Total annual SO/2 emissions in north-eastern Alberta from the two sources, Syncrude and Suncor, are about 150,000 tons. Emissions in the north-east region of the United States total 19 million tons. In the Ohio valley alone, there are emissions equivalent to over 100 Syncrude plants lined up along the valley.

Inco in Sudbury, even after implementing extensive reductions since the 1960's, currently emits ten times as much SO/2 as does Syncrude, and further, NOx has a major role, and nitrogen dioxide, dioxides in nitrogen, has a major role in both soil acidification and ozone stress on vegetation, and an aspect of the oil sands industry is that we have an exceptionally low ratio of NOx emissions to SO/2 emissions.

It is not obvious that north-eastern Alberta has an acidification problem. Syncrude considers a solid scientific assessment, specific to our region, a prerequisite to a change to regulatory requirements in the region.

I would like to cite a positive example, that was mentioned by Don Klym, of a region-specific action, and that's the work of the Fort McMurray Regional Air Quality Co-ordinating Committee. This committee is a joint commitment by government, industry, and local communities to work on air quality concerns relative to the Fort McMurray and Fort MacKay region. For example, the committee has developed and is in the process of implementing a protocol designed to reduce odours in local communities caused by oil sands operations.

And I would like to respond to Pat McInnes' concerns about communication and the need for resident support in reducing odours in the region. Both these components are built into this protocol, and we are looking forward to extensive communication of odour concerns and odour abatement actions in the region, and we are looking forward to resident participation in helping us understand odours. The operating plants require correlation between plant activity and odour incidents, and we are looking forward to a better understanding of these issues. We need resident help.

Syncrude considers this Odour

Protocol an excellent example of the power of region-specific action and recommends this model be given due consideration in the formulation of the Clean Air Strategy for Alberta. It is virtually impossible, and likely counterproductive, to attempt to develop legislation and regulations to cover every circumstance. Certainly, a better approach is to establish a framework which encourages co-operation amongst regional stakeholders to realize common goals.

Turning now to technical and economic practicality, it is obvious that the Clean Air Strategy for Alberta is constrained by technical and economic considerations. Within our province we must ensure our actions are practical and achievable, and we must ensure we are not consuming resources which would be better directed to more severe problems elsewhere.

It is not obvious that Alberta must settle for the status quo. An example in Syncrude is the Naphtha Recovery Unit. One environmental issue associated with the existing hot water process for extraction of bitumen from oil sands is the loss of naphtha diluent to the tailings pond. Much of the lost naphtha is bound to the mineral particles in the tailings and is buried in the tailings deposit. However, some naphtha enters the air as a fugitive emission, contributing to local odours, ozone formation, and ultimately to atmospheric carbon dioxide.

Syncrude attacked this problem through research, development, and construction of a new process unit. The point is without Syncrude's fundamental research and development, recognized as a new technology in a Canadian patent, this process and this operating unit would not exist, and I would like to point out this technology has also been implemented by Suncor under licence to Syncrude.

It's worth noting that Syncrude's Naphtha Recovery Unit is a classic example of waste management activity, recovery being one of the four R's of waste management, which is both environmentally beneficial and economically attractive.

This example illustrates that things which are impractical now may, in fact, become practical in the future. The Clean Air Strategy for Alberta must recognize practicality and economic feasibility. However, the strategy should also include mechanisms for support for research and development. To ensure that research does take place, the strategy should give direction to research and development programs, highlighting priorities and exploring funding structures. This is an area where joint action by industry and government can lead to cleaner air and a healthier environment in the long term.

In Syncrude's case, we are currently conducting research and development in several areas which have potential to yield air quality benefits. These include further development of the naphtha recovery technology I described; metallurgical and process changes to enhance boiler reliability, which people who are familiar with our operation know that we are most liable to cause environmental impacts when we divert gas streams around our boilers, boiler reliability is a key issue for us; and thirdly, we are studying processes for sulphur emission reduction.

Syncrude considers sulphur emission reduction an example of an area where emissions reductions are constrained by technology and economics. Over the past five years, Syncrude has reduced by 30 percent its emissions of sulphur dioxide per unit of production. Given our current technical knowhow, it is difficult to reduce emissions further. Therefore, our current focus is on technology development, and the limiting factor, the factor that's difficult for us to overcome, is the retrofitting of new equipment within the confines and the configuration of an existing plant.

Syncrude considers it essential the Clean Air Strategy for Alberta contain explicit recognition of technology and economics as constraints, and explicit recognition of the difference between new plants and retrofit situations.

I will, in the interest of time, go directly to a summary of our recommendations.

Syncrude recommends the Clean Air Strategy for Alberta include the following elements:

One, the strategy should include a commitment to environmental impact assessment as a prerequisite for regulatory action;

Two, the strategy should clearly state that regulatory requirements will vary from region to region to reflect the environmental needs in each region;

Three, the strategy should support the concept of joint government, industry, and community action within regions to work regional issues;

Four, the strategy should establish technical and economic feasibility as tests for application of regulatory control, unless there is a clear risk of permanent environmental damage;

Five, the strategy should draw a distinction between regulatory requirements for new facilities and those for retrofits to existing facilities;

Sixth, mechanisms to encourage and support research and development of new emissions control technologies should be a key component of the strategy;

And finally, the strategy should support research into and assessment of full life-cycle emissions of radiative gases, greenhouse gases, associated with specific fuels.

Thank you again for the opportunity to present these remarks to this meeting. Thank you.

MODERATOR MILLARD: Thank you, sir. Gordon Shaw of Fort McMurray?

GORDON SHAW: Thank you, Vern. I am Gordon Shaw, I will be speaking on behalf of the City of Fort McMurray. I will be making a brief presentation tonight, as I understand we have until January 15th to make a more extensive submission at that time?

MODERATOR MILLARD: Yes.

GORDON SHAW: The City of Fort McMurray welcomes the opportunity to provide comments on a Clean Air Strategy and to recommend options for action. As you may be aware, there are two large oil sands facilities located within 50 kilometers of the City, and there is a possibility of a third oil sands plant being developed. As a result, the City is very concerned that the Clean Air Strategy that results from these public hearings reflects the regional concerns that you will hear today.

Hydrocarbon mining and refining operations generate compounds which are odourous. Both Syncrude and Suncor expend considerable effort, through capital expenditures and engineering, to control or eliminate these problems, both on and off-site, and they are to be commended for doing so.

However, despite the efforts by the companies and by Alberta Environment, the major problem confronting them is that the sources of odours can be very difficult to delineate due to the sporadic nature of the releases causing them, the changeability of the local meteorology, and the time of response available to industry and government investigators.

This is reflected in the number of complaints received from the Fort McMurray region in the first half of this year, and the number of incidents resolved compared to complaints, as shown in this table.

This is the table I have for you. In the first six months of this year the total number of complaints were 85, the total number of incidents were 43. In Fort McMurray, the complaints-to-incidents ratio was 80 to 37. The number of incidents that were resolved were 13, and the number of incidents investigated were 20. Although the number of complaints may seem small when compared to the population, Wallace found that factors which influence the effectiveness of any reporting system include the following:

One, the public awareness of a complaint reaction system;

Two, the public motivation to act on experiencing odours;

Three, the success at generating a response to complaints registered by the public; and

Fourth, the availability of investigatory personnel and equipment.

It is important that the Alberta Environment complaint line have increased advertising and education and information work done in the Fort McMurray area to educate people to the capabilities of this system. It is true that RAQCC is developing a Communications Strategy to address this problem, but it is important that people understand that the complaint line will result in action being undertaken and that no repercussions will result from doing so.

It is also important that the response time devoted to detecting and isolating odours be quick. If you have ever been in Fort McMurray when odourous emissions are present, you know that such odours can cause mental and physiological stresses. Typical reactions include nausea, headache, loss of appetite, impaired breathing and, in some cases, allergic reactions.

This leads to the next issue: the monitoring network presently used to detect odourous emissions. A monitoring system should be capable of operating 100 percent of the time.

What do I mean by that? In the first six months of this year, I can give you several examples of this. In January the THC was operational for 22.2 percent of the time; in February the THC was operational for 85.9 percent of the time; the COH was operational for 92.3 percent of the time, and the H2/S was operational for 78.6 percent of the time; in March of this year the CO was operational for 85.5 percent, COH was operational for 82.8 percent, H2/S was operational for 85.3 percent, NO was operational for 84.7, NO/2 was operational for 84.7, NOx was operational for 84.7, O3 was operational for 84.7, SO/2 was operational for 85.1, and THC was operational for 85.6; in April most of these were operational for 100 percent of the time; in May COH was operational for 66.1 percent, the THC was operational for 90.1 percent; in June of this year COH was operational for 77.2 percent while THC was operational for 64.6; finally, in July, THC was operational for 54.7 percent of the time, and COH was operational for 88.3 percent.

Unless the monitoring system is operational for 100 percent of the time, then what's the purpose of having that system in place? It's important for the health of the citizens of Fort McMurray that the system is operational for 100 percent of the time, not for the percentage of time that I have indicated for the first six months.

So these are just general observations that the panel should be aware of when developing a Clean Air Strategy. In that strategy, the problems identified here should be addressed if the strategy is to be successful. Fort McMurray is a unique situation requiring unique solutions.

The opportunity to speak before the panel to outline the problems that occur here is welcomed. It is hoped that the solutions provided in the Clean Air Strategy will be equally welcome. Thank you for your time.

MODERATOR MILLARD: Thank you, sir. Now is Chief McDonald present by any chance? Jim Rogers? This, I take it, is a separate submission?

JIM ROGERS: Oh, yes, sir. This is a grevious kind of a situation, but because I am representing the Trappers' Association I am, therefore, sort of disenfranchised from having, you know, my own irresponsible presentation by comparison.

A number of things that personally affect me or are observations of my fairly substantial involvement over the number of years, and I have a couple of observations and I don't know if this is particularly in order, but when both of my friends here have made some comment about good science, I would suggest that good science is clean science, and if we want our science to be clean then we should have, as Bruce has indicated, a sort of a community endorsement behind the design of research projects and the monitoring strategy so that then they will have some kind of confidence with the community, because I am inclined to find myself more and more sceptical when I find us in this antagonistic kind of challenge and legal process. This is our community, this is our atmosphere, this is our future, and these are our industrial developers who are developing our resources for us. Hopefully they are going to make a buck, they are going to be able to carry on, and they are carrying on to render services to our community.

For them to be seeing themselves as conspiring to hoodwink the system or restrain or constrain their employees from participating in the community life and saying, well, we have 20 or 30 of the best-informed specialists in the world in our community but they don't participate in our environmental groups because that would be somehow a conflict of interest is somewhat akin to saying to your children, well, I don't want you to talk to the other kids in the playground because you might say something about what's going on at home and we don't want that to get out.

It would appear that the direction that we want to be moving in is a direction that would cause industry not to even consider fudging the data, disconnecting the instrument, or slipping by, that they should be able to live with and be straight out front with their reality, and our system, the environment and us, are presently absorbing all the impacts and we should continue to, but working in the real spirit of citizenship on all directions.

I am concerned about the concept of direct stakeholders. I am concerned that it isn't good enough to say, well, there is nobody really living downwind from emission point X and so there is really nobody that's directly concerned about the global common in that direction, and therefore it sort of just, it sluffs off over there, and I would personally recommend that some of our recognized environmental groups be recognized as, in fact, concerned with the quality of life on the planet or the global common, and one of those groups, I would suggest, is the native bands, because they seem to have a spiritual or a mandate under their culture to be concerned about the whole, which some of us find some frustration with in the system and somebody saying, oh well, you might have an opinion, but you are really just a troublemaker if you want to concern yourself with that particular aspect of the environment.

I bring to your attention that when I was a child, my father was in the Army, and he told us about a little transmitter headquarters building that the military had on a flying boxcar, and the parachutes sort of pulled this thing out of the rear end of the aircraft and it went down, and the parachutes didn't open and it went about ten feet into the ground with things flying, and he referred to this as "thundering in", and my concern as an individual is that our environment may well be in some like state, that if you and I or we in this room were sitting in that little building going down at, you know, the acceleration rate, we might hear a slight sound but everything might be quite in order and quite optimistic until, potentially, things could come to a thundering and surprising windup on us. And it's not my concern to say that this is the panic or that we should regard this as what's going on, but that we should be aware that things like have never happened before are happening.

I would bring to your attention that one of the matters of mitigation, particularly to us as a high producer of airborne pollutants, is our forests, and any kind of harvest process that, in fact, wipes out our forests for a substantial number of years, in their part in that equation, is something to be very gravely considered as a part of a larger equation.

In the forest there seems to be a positive and minus in the equation. It's not just carbon coming out of the atmosphere and no carbon going in. So it may be that we can design management or harvest techniques that would minimize the losses and maximize the things that would detract from the equation, and that kind of examination of harvesting techniques and reforestation may yield something into that larger equation with the atmosphere.

I just made some mention there about the illusion that a person may be regarded as just a troublemaker, and when I have been an intervenor in a number of initiatives in this area I have voiced a concern that if we don't put a maximum amount of pressure on our industry, that they will maybe behave in such a manner as to curtail future developments, and I can sort of rest a little bit easy that I have done the best I could and feel that I have done a responsible job in trying to force or push that issue, that we wouldn't then find ourselves already exceeding the limits of our airshed or in a position where an OSLO might come in with an increment of five percent of the emissions that one of our other plants does, and that we don't have enough room in our airshed for even five percent, that we are already overdone in that way.

And I want to bring to your attention that the last thing in the world the people who are trying to be environmentally responsible need is to have, see somebody like CSIS or the CIA or some well-funded, well-oiled conspiracy against the public good, from my point of view, out there photographing, fooling around, diddling around, buggering up our democratic process and the process of information within our country. It is absolutely the sickest, saddest kind of a commentary that our Federal Government would be saying we don't have enough money for education, we don't have enough money for this and that, but we do have enough money to afford a squadron of no-name human beings to show up on the steps of the legislature and photograph people day after day just in case they are plotting the violent overthrow of the government, and on behalf of my children and myself and numbers of my friends who are trying to do a good, honest, responsible job as citizens of this country, I want to log my strongest kind of complaint. I know that it's not your decision, or anybody here, but that message has to get back up the chain to our government; that if they want to take the responsibility down there in Langley, Virginia to say nothing is going wrong and we will cosign the cheque, then they better start standing up and doing it, but otherwise we are, all of us, asking questions, and all of us hopefully trying to put together our little individual bits of data to come up with a picture of what's really happening, what our real priorities have to be or might be and what strategies we can take or make that may ameliorate any negative impact. I thank you.

MODERATOR MILLARD: Thank you. Is there anyone else that would like to make a submission? I know that there is no one else registered but -- I take it not.

It's now close to 9:00. We have got a little bit of time for discussion. Are there any comments that anyone would wish to make? Yes, sir?

ROD MacLEAN: Yes. Could you explain the process by which the input that you have received today is going to end up as part of the government strategy? Just, you know, it goes from here to the bureacracy and is typed up, and then it goes to the -- just, you probably know it better than I.

MODERATOR MILLARD: Well as I understand the system, and I haven't been involved in it at all, but --

ROD MacLEAN: Pardon me. Who are you anyway?

MODERATOR MILLARD: My name is Vern Millard, and I have been asked by the government to moderate these regional sessions that are being held throughout the province. We had one session in Bonnyville on Tuesday, and others will be held in Pincher Creek and Medicine

Hat and Peace River, Edmonton, Red Deer, and Calgary.

There was a workshop in September at which, and I don't know, I wasn't involved so I really don't know very much about it except what I have read about it, but in which there was a group of people from various walks of life, environmental, industry, public health, government, etcetera, that got together and talked about issues relating to a Clean Air Strategy. They set out to identify some of the problems, they looked at actions that might be taken, and they considered programs that might be developed, but particularly the identification of issues.

Then there are these regional meetings that I have referred to to gain input from the public with respect to these issues. A set of documents has been prepared that provides a focus in terms of the kinds of problems that one can identify as needing a strategy, a Clean Air Strategy. If you haven't seen the documents I would certainly commend them to you. I found them very interesting in reading them through.

Then there will be, after these sessions are finished, I will be completing a Moderator's report summarizing what people have said and commenting on it, and it will be a public document of course.

Then there will be another

workshop, in the spring of this year, to take into account all of the things that have been said and to flesh out programs that can be instituted to assist or to develop a sound Clean Air Strategy, and then there will be a final report that will go to the government, and it will then consider that report and decide what it wishes to do.

That's the program as I understand it. I know other people here have been involved to a greater, well I haven't been involved at all, but who have been involved from the beginning.

Cheryl, is that a fair statement, or would you want to modify that?

CHERYL BRADLEY: Yes, I think that's a very fair statement, and maybe we should add that there is an advisory committee to this process which contains representatives from the Canadian Petroleum Association, Independent Petroleum Association, the Alberta Environmental Network, the Urban Municipalities Association, and others. We have two of the members who sit on that advisory group with us tonight; Al Brekke of the Alberta Utilities Planning Commission and Jim Boucher from Fort MacKay, so you could chat with them perhaps a little bit after if you want to learn a little bit more about how the advisory groups work and its puts. But they keep us focused on the straight and narrow.

BOB MITCHELL: I am Bob Mitchell, Clean Air Strategy office. Two things I would like to add.

One is that a lot of the information that Vern mentioned, the additional information, is on the back of all the fact sheets there which a lot of you already have. You can phone our office and we will send it to you.

The other thing that I would like to emphasize is that the Minister of Environment and the Minister of Energy have committed that the recommendations coming out of the entire process will be submitted to Cabinet and they will be considered.

MODERATOR MILLARD: Thanks Bob. Yes?

DOUG FAULKNER: As a parent and a concerned citizen and a resident here for 12 years, I am appalled at the City's submission this evening on the hydrocarbon emissions and the monitoring system.

Is there anybody I could ask the question to here; who controls the monitoring system and how often is it, on a daily basis, and if so I would like to support the City representative, Mr. Shaw, in backing him that this system should be operational 100 percent of the time.

Now as I wrote down some of these figures from January to July I am appalled that in

January, when our weather is fairly cold here and the atmosphere is quite heavy, that that was only working 22 percent of the time; then in the summer months, May, June, July and no doubt August, September when our children seem to be outdoors most of the time and playing, this monitoring system only operated approximately 65 percent of the time.

I would like to stress the importance that whoever polices this monitoring system should pay stricter attention to it. If only 13 complaints were resolved in the six months, how many complaints are there that haven't been resolved, how many complaints haven't been called in?

As an allergy sufferer myself it is the most difficult time of the year for me, summertime living in Fort McMurray, and it really bothers me. Having children, I am concerned, I am gravely concerned that the atmosphere -- and I have heard, I don't have anything to substantiate what I am saying -- but I have heard via the grapevine that the medical profession of this community, in a couple of years past, was so concerned about it that one M.D. resigned and left the community, and I don't know how accurate that might be.

But it is a problem. I feel that Fort McMurray has enough concerned citizens that would like to pass on to you, and as a citizen and a parent that would like to pass on to you and through this body, our concern that somebody should be policing this thing a little more closely.

I would like to ask a question to Syncrude and Suncor rep's tonight, that if 30 percent of the sulphur dioxide emissions, or if they were reduced 30 percent, what amount is passing into the atmosphere? Do you have any record of how much sulphur dioxide is passing into our atmosphere daily from your plants?

BRUCE FRIESEN: If I could, I wondered if you had another point, but I would love to respond to a couple things you said, first off the last one.

SO/2 emissions in this region, Syncrude and Suncor are the ninth and tenth largest single sources of SO/2 in Canada. I can speak for Syncrude. Our emissions amount to 200 tonnes per day of SO/2, and that number is reported monthly. We have a monthly report to Alberta Environment, and all the data we supply Alberta Environment is publicly available, you just have to ask. The gentleman is here, Bill Macdonald, put his name on a letter and he will pass it through the system and get it to you.

We also stand up quarterly in a public forum, this Regional Air Quality Co-ordinating Committee with representatives from the City of Fort

McMurray, from the MacKay Band, we stand up in public and describe our air quality performance. We are not always as proud of it as we would like to be, but we never hide it, it's public.

And maybe it's not fair, Ann, but Councillor Ann Dort-MacLean is the City of Fort McMurray representative. So as I say, it may not be fair, but Ann has the data.

DOUG FAULKNER: Thank you.

BRUCE FRIESEN: I am using a pad of paper here that's re-used, and there is stuff on the other side and I turned it over and the heading here was Number of Suckers by Survey, 1989.

I sincerely hope that Syncrude is not treating the citizens of Fort McMurray as suckers, but rather that we treat the citizens of Fort McMurray as "stakeholders", is the buzzword, the joint occupiers of this region, and particularly on the SO/2 research that we are doing, we are very keen to have full understanding of the acidification in this region, developed not in-house by Syncrude and not in-house by the government, but by a joint group.

While I am on my feet, I might be a little out of line, but I would like to comment on this monitoring question. All the numbers that have been quoted to date relate to one of twelve air quality monitoring stations operating in this region. Syncrude operates five stations, Suncor operates five stations, Alberta Environment operates a station in Fort MacKay and a station in Fort McMurray.

The five stations operated by Syncrude, by law, must achieve at least 90 percent uptime for every individual analyzer in each of the five stations, and I just wanted to --

DON KLYM: I guess, in defence of Alberta Environment -- maybe, Bill, you want to speak to that?

BILL MACDONALD: I would like to make a couple comments.

DON KLYM: Could I get the Suncor comments out of the way, Mr. Moderator?

MODERATOR MILLARD: Sure.

DON KLYM: Suncor emits, on the average, a little higher than Syncrude. We average about 220 metric tonnes or tonnes per day of SO/2 to the atmosphere.

And I just wanted to add that there is a licencing, a licensed limit, in our case it's 310 tonnes per day is the licensed limit. In our case we have two sources, our powerhouse stack and the sulphur plant incinerator stack and some flaring on top of that.

And the other thing that I would

like to add, that based on modeling of dispersion of that SO/2 into the atmosphere, based on verification in the field as to where that SO/2 goes, the bulk of our SO/2 is deposited nearby the plant, it's within 15 kilometers or so. We can verify that with, you know, through modeling or actual verification in the field, looking at soils and lichens and the likes of that sort of biological indicators.

Just to add to that, we also biomonitor. Biomonitor means looking for effects in the forest to see if things change over time, and Syncrude has a similar program. We look at lichens, we look at leaves on the trees and so on, and we do that since 1975, and of course Suncor has been emitting at approximately that rate since 1977, and Syncrude came on stream in '78, and we find very little out there.

And this is all public information. We have -- the reports are available as well.

MODERATOR MILLARD: Bill Macdonald?

BILL MACDONALD: Yes. My name is Bill Macdonald, I am with the Air Quality Branch of Alberta Environment, and the concerns you have expressed are very valid concerns and we have a problem with those numbers that you indicated there also.

As Bruce mentioned, we do have

the station in Fort McMurray and we also have a station in Fort MacKay that we operate. We have numerous parameters in those stations.

The problem that we have had over this last year was with staff, and with our Fort McMurray office we had a changeover in the staffing, but in the meantime we have been flying people out of our Edmonton office on a weekly basis to do, come up and check the monitors and do calibrations on the instruments, but there definitely has been downtime on some of the instruments and we will be doing a better job in the future with that Fort McMurray station. We just recently have hired a replacement permanent individual for the Fort McMurray office here, and so he'll be doing the checks on the instruments and trailers on a daily basis, doing the proper calibrations.

In the meantime, generally what we try to target for any of the stations in the province is to get a minimum operational time for each analyzer of 90 percent uptime. You have got to understand that there is going to be a little bit of downtime with technology of the instruments there, but we try to, generally we have them up quite high, in the high 90's or 100 percent in the analyzers, and it's our fault, and we are going to be doing a better job about that very soon.

DOUG FAULKNER: So is it that the May, June, or the June, July especially, especially the July month, you were short-staffed or the changeover of staff?

BILL MACDONALD: Well we had a changeover. We had a person that left, and then we were hiring in for a new person, and that took a little while. In the meantime, we were flying people out of our Edmonton office to look after the stations. The previous person we had in here was, also only had stayed for a short duration, there was also a double replacement fairly quickly, so --

DOUG FAULKNER: May I ask you, how dangerous is the air quality or the atmosphere around those months when your monitoring system is down? How dangerous is it to our children and to those that are playing outdoors?

BILL MACDONALD: As Bruce had mentioned, there are numerous other stations in the area. There is ten company stations, each of Syncrude and Suncor have five ambient monitoring stations surrounding their plants, and so we keep tabs on all of those stations. Any time that there is any readings in excess of the ambient regulations from any of those ten stations, they have to get that information into our department within 24 hours and to take any corrective action.

DOUG FAULKNER: You didn't answer my question.

How dangerous is it?

BILL MACDONALD: What I am saying is we have additional monitors that were getting readings through that time period that weren't indicating any extremely excessive readings, through that time period, from the other stations.

What we have done also this last year is, from the ten stations that the companies have, we are realining two of those stations from each of the companies to put them more in line with the communities of Fort McMurray and Fort MacKay so we can get a better indication of what's coming from the facilities into both of those communities.

But, you know, through that time period those five stations did record readings that would have been in excess of the ambient hydrogen sulphide, and some readings in excess of the ambient sulphur dioxide objectives that we have for Alberta.

DOUG FAULKNER: And you are saying there is no danger to our health and well-being?

BILL MACDONALD: That's what I am saying. The levels that we recorded versus what any effects would be on health, those levels were below any health-effect levels.

DOUG FAULKNER: Has there been any record of any effect on fish and wildlife caused by the sulphur dioxide emissions and the hydrocarbon emissions?

BILL MACDONALD: I guess I am really probably not qualified to comment on that. I am more involved with what just the general readings would be, but I am not sure in terms of studies relative to animals in the area, or what.

DOUG FAULKNER: Thank you very much, sir. Thank you.

BILL MACDONALD: But the other point on that, I guess that, you know, relative to the levels that we are seeing at the stations, even the ones that are over ambient objectives because we have a lot of leeway on where those objectives are, any of the readings that we have seen would not be a health concern for people and also, conversely, for animals, but I am not aware of any studies that have been done that checked out animals or tagged animals to check for effects on them in the area, and I think that's what you were asking.

DOUG FAULKNER: I want the commission to be aware that we are concerned as families and parents.

MODERATOR MILLARD: Thank you, sir. I think there was a question?

PAT McINNES: I beat you, Jim. I had a question for you.

What about the high levels of ozone? Like, the ground-level ozone was really disgustingly high. Our normal annual for the year went from 0., or point .020 ppm's in 1987 for an annual to .022, and this year, new math, old math, no matter how I try and figure it out, we are sitting at .028. That's a hell of a big jump.

I checked Forestry, I checked Environment Canada, the weather during that time period wasn't any different. Could somebody possibly maybe look into it and get back to me with an answer, because that is something that is serious, and it does affect people's health in the long term, and if it's becoming a trend then I think it's something we definitely have to look at very seriously.

BILL MACDONALD: Just on that ozone question, we did, we have looked at some of the older ozone data and there has been some studies done in what we call the Alsands, it's out by, it would be east of Fort MacKay, and looked at some of that data going back a number of years, and there were high ozone readings.

PAT McINNES: Are you referring to the Bitumount, the Birchmount ones? They weren't that high.

BILL MACDONALD: The Alsands. We are finding that even when the winds weren't blowing from the plants towards the stations, they were still getting a lot of the readings from ozone that would be over what our ambient objectives were in the province, and there were some theories as to what might cause some of that, and one theory is ice falling down, downwash out of the upper atmosphere, that type of thing, but it's certainly an area that we should be doing more studies on.

PAT McINNES: I would really appreciate any more information.

BILL MACDONALD: I have got some information that I can send out to you.

PAT McINNES: I would appreciate it. You guys have my name and number and address and everything anyways.

BILL MACDONALD: I will do that for you.

MODERATOR MILLARD: Jim?

JIM ROGERS: I would just like to elaborate, now this is the kind of thing that I am concerned about, but the fellow that was here from Alberta Environment was by the name of Kevin Pilger, and his wife Glenda was a member of our environmental group.

She wasn't here, to our environmental meetings, with hands full of confidential documents or anything. She was concerned about the environment, she was quite knowledgeable, it was in the field of what she was interested in, and maybe there was some kind of sluff-over of something that maybe her husband was concerned about or frustrated about that might have gotten to the ear of somebody outside of the secret, soundproof doors of Alberta Environment, but the fact is that he wasn't phased out with somebody else that came in to replace him that he briefed, he was shifted out. I have been in contact with Glenda in the City since, and she is extremely hesitant to have anything to do with any kind of an environmental group, because it could be interpreted that she has had, or that her family has had a very negative experience that would cause her husband to want to look for employment in another province if they could get it.

The other one that comes to my mind is that, just prior to the CAP hearing that was held, I believe, up the hill at the MacKenzie Park Inn, there was some word to me that there had been a number of people from the environment staff of Syncrude that had been terminated or retired or quietly dismissed, and there is some sort of a question in my mind as to what might have gone on behind the scenes there and that we haven't seen a responsible management in that field, and those are concerns.

The other thing about the animals, I just bring to your attention that we have a problem in this province with white muscle disease. It's caused by an increase in sulphur in the soil which causes our organic bodies, us animals are not able to distinguish the difference between sulphur and selenium in the food, so if the amount of sulphur increases by tenfold it amounts to your body getting only one in ten where it used to get a half in selenium, and in the case of domestic cattle they have been, or calves, they have been able to supplement the food or inject the animals at birth so that they survive, but no such kind of data has been generated on wild populations.

On one occasion when I was working near the Syncrude site I came across a juvenile woodchuck that wasn't really able to effectively walk and sort of staggered around. I killed it with a stick and turned it over to the Wildlife Department, which is also, you know, a member of the governmental fraternity, and there was no response came back or report made.

We don't know what possible impacts on things like caribou might be, but last fall I flew over my trapline, which is about 40 miles east of the plant, and I found one active beaver house in 288 square miles. That sort of is maybe not definitive because it was a fly-over and they may have, you know, lodges in banks somewhere, but generally their ponds are quite large and you can identify them from the air quite readily.

MODERATOR MILLARD: As I recall, Syncrude has done quite a bit of work in terms of wildlife inventory, has it not, not directly but through consulting studies?

BRUCE FRIESEN: Yes. I would be happy to give sort of an overview of what we do do.

MODERATOR MILLARD: Why don't you.

BRUCE FRIESEN: We have talked about SO/2 monitoring. The longest time series information is this lichen work, and the lichen are the organisms considered most sensitive to SO/2.

On the animal side, we do beaver population, moose population, breeding bird population, and species diversity samples, waterfowl samples at regular intervals, typically every second year for each of the individuals species.

If you don't mind, while I am on my feet, there has been a lot of discussion of odour tonight, and I thought it worthwhile to just spend about three minutes talking about the odour situation in Fort McMurray.

I think it's fair to say, it's certainly true for Syncrude, that we recognize that the level of odours in this community are beyond the socially-acceptable level, we recognize that those odours are associated with physical effects that people find unpleasant, and we are working very hard to reduce the incidence of odour in the region.

The difficulties we have had over the past couple of years in responding to odours have been the level of resources available in the region. Alberta Environment and the E.R.C.B. have tried very hard to do an effective job of tracking odours, they have been resource-limited, and for that reason Syncrude and Suncor collectively have moved to resolve that situation, and Bill, you have now hired three additional people on various contract bases to add to the -- is that a true statement?

BILL MACDONALD: Yeah, two people under, are coming up under contract.

BRUCE FRIESEN: So the resource constraint should be removed now, and every odour incident reported to Alberta Environment should be diligently investigated.

And to assist with that Syncrude has established, in addition to our five fixed monitoring stations, we have established or committed to establishing a mobile monitoring station such that, if there is an odour situation in town, we can respond quickly to track, to look for a plume of odour moving away from one or other of the plants, and this is particularly relevant to Fort MacKay, because the response time for somebody based in McMurray to MacKay is quite slow. We have a plant nearby, and also we have people there 24 hours a day so that they don't have to answer the phone at midnight, get dressed, and get in the van and drive, they can respond to the odour.

I certainly didn't want to give you the impression, Pat, that I was attacking you, but quite sincerely saying that the expectation is that we will be relying on identification of odour situations by residents to trigger this response, and the outcome of it will be better correlation of odour events with plant events.

And this information is not necessary to take some actions to reduce odour situations in the region, some actions are already under way. To cite a Syncrude example, we have a problem with reliability of a particular piece of equipment. The next time that piece of equipment is out of service, which is in March, it is going to be replaced with a new, redesigned version which should be more reliable, and I know Suncor is doing a lot of work, but there is a further understanding required, and this tracking mechanism is attempting to develop that further understanding.

I just wanted to make it very clear that we acknowledge this to be a genuine problem in this region.

MODERATOR MILLARD: Now you were going to comment on wildlife studies? You mentioned that you --

BRUCE FRIESEN: Well I said we do -- Jim mentioned beaver populations. We have done, every two years, a beaver population survey by helicopter on our lease for the last 10 or 12 years.

MODERATOR MILLARD: And what do they tell you?

BRUCE FRIESEN: There is no change in population.

MODERATOR MILLARD: Those studies are available for the public to view? I mean if the gentleman wanted to go and look at them, they could do so, could they?

BRUCE FRIESEN: Yes, certainly summaries of all the information we have collected were included in the Syncrude submission to the E.R.C.B. in connection with our expansion project, but as a fundamental principle we don't keep anything secret. If people ask, we would prefer to show them the information.

MODERATOR MILLARD: Perhaps you might be interested in having a look at the studies?

DOUG FAULKNER: Yes.

MODERATOR MILLARD: Any other comments, questions?

JIM ROGERS: I will just make a comment to that, and that is that I don't know if they are harvesting the beavers on their lease, but it's pretty well an understood thing that if the population isn't managed it goes through rise and fall, and to say that it's unchanged is probably something that Bruce would like to qualify sometime, because these populations go through a quite predictable rise in population, they then destroy the ability of their habitat to carry the population, and then they drop off quite radically, and one of the problems that we have in finding an indicator species is to determine what population they would approach before they would collapse in an unstressed circumstance, and then try and interpolate that to see if they have met that requirement of population density prior to the collapse, but it's not maybe quite as simple as he has indicated here.

BRUCE FRIESEN: You are quite right, Jim. When I said "unchanged", I was speaking in a scientific context. It might be twice as much next year as it was last year, but two years later it might be what it was four years before, and the overall trend is unchanged.

And you are quite right that these large animals are not good indicator species. Moose, beaver, waterfowl, they are not good indicator species, but when we are doing our environmental monitoring around our operation, we have two categories of study; one category of study is studies of good indicators, sensitive indicators; the second category of study is studies of species that are important to people in the region and, therefore, people in the region want the information.

So we recognize they are not good indicators but we recognize the value of the information to people.

MODERATOR MILLARD: Other comments or questions? Well if not, let me say on behalf of the people that are conducting the Clean Air Strategy that we appreciate your comments and your attendance at the meeting and appreciate the ideas that you have put forward.

Thanks very much, and good evening.

(Meeting ended at 9:30 p.m., Thursday, November 8th, 1990)

COURT REPORTER'S CERTIFICATE:

I, Donald G. Meyer, CSR(A), Court Reporter, hereby certify that the foregoing pages contain a true and correct transcription of my shorthand notes taken herein, to the best of my knowledge, skill, and ability.

CSR(A)

Donald G. Meyer, CSR(A)
Court Reporter

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ORIGINAL

CLEAN AIR STRATEGY FOR ALBERTA

Transcript of Proceedings

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Regional Meeting

Held at Peace River, Alberta, on
Tuesday, November 13th, 1990

* *

Appearances:

Vern Millard -	Moderator
Susie Washington - and Cheryl Bradley	Western Environmental and Social Trends
Don Meyer, CSR(A) -	Court Reporter

Transcript of Proceedings

(Meeting commenced at 7:15 p.m., Tuesday, November 13th, 1990)

MODERATOR MILLARD: Could we start the meeting, ladies and gentlemen, please?

Well good evening, ladies and gentlemen. Let me say welcome to you on behalf of all of the people, government and industry, that's involved in the Clean Air Strategy.

My name is Vern Millard, I have been asked to moderate these hearings or meetings, I should say, discussion groups, regional discussion groups.

The Clean Air Strategy has been designed to consider some of the problems facing our world today, and I have been asked to make some introductory comments, and what I have done is to take some of the fact sheets that the Clean Air Strategy has put together, which I have quite frankly found very interesting and helpful, and I have just made some notes on them, and I will just go and comment on them, so that he can get close enough so that I can see them.

Well first of all, the question is what is the Clean Air Strategy, and if we look at the state of the world today there is a growing consensus, on an international basis, that there are problems developing in our planet, primarily caused by emissions that we are all making into the atmosphere.

The Clean Air Strategy is designed to consult with people to get their views about these matters, and the Clean Air Strategy has three basic objectives; first of all to identify the issues and the important issues; secondly, to develop practical alternatives and ideas how to solve them; and then to present a plan to government.

The Clean Air Strategy has four main phases. The first phase took place in September of this year, when a group of people that are interested in this particular area got together to talk about the kinds of issues that relate to clean air. Out of that they developed an identification of the major issues.

The second stage are these regional meetings. Last week we in were in Bonnyville and Fort McMurray getting the ideas and input from people in those communities, and of course we are carrying on that same plan tonight in Peace River, Friday night in Edmonton, and so on. We are going to be visiting Red Deer and Calgary and Pincher Creek and Medicine Hat for further meetings.

After the regional meetings, there will be a workshop in the spring of next year to further refine the issues and alternatives.

And finally a report, which will

include recommendations and proposals, will go to the government.

What are the major problems? Well, as I said before, there is a question of emissions into the atmosphere, and there is a growing consensus among scientists and research-oriented groups that we are developing a problem for our planet. For example, there was a recent meeting in Geneva with 700 scientists looking at the global warming effect, or what is frequently called greenhouse effect, and there are three main problem areas.

The first is that greenhouse effect, and fundamentally what it means is that the heat that is being radiated from the earth is being trapped by gases in the atmosphere, and it returns to earth. That's the theory, and there seems to be growing evidence that that is indeed happening. If you look at long-term temperature trends of the earth, you will find that they are getting higher. The last decade has been particularly that way. So the greenhouse effect can have this global warming, which has an impact on the ice cap, the level of the oceans, which of course has major problems, or potential problems, for maritime nations. It also has a feared impact in terms of extremes in weather, not only warming, but greater extremes.

I think there is a figure that

kind of shows how the global warming takes place, and you can see that normally the heat from the earth is radiated into the atmosphere, some of it comes back, but when the so-called greenhouse gases accumulate, it means that more of that heat returns to the earth, and hence the warming impact.

Now a second major potential problem area is acid deposition, so-called acid rain, and that's had a good deal of publicity over the last decade or so. We have all heard about Eastern Canada and the Eastern United States and the problem with clean air and the need for agreements between Canada and the United States. Fortunately, that seems to be making some progress.

Acid rain is caused by sulphur dioxide and nitrogen oxides being emitted to the atmosphere. Thinking in terms of Alberta, the sulphur oxides primarily occur from processing sour gas or burning coals, which contains some sulphur even though it's low sulphur content, or sour, processing or producing sour oil.

The nitrogen oxides occur from industrial developments, but also from our own use of motor vehicles of various types.

The third problem, and one that isn't all that common in Alberta, is smog. Those of us that live in the two major centres see the impacts of the nitrogen oxides that are produced from cars affecting the atmosphere on particularly bad days in Calgary and Edmonton, you see that yellow cloud. In other areas, of course, we all know about the problems in Southern California, there are problems in Eastern Canada as well, particularly along the southern border, Windsor on to Toronto and into Montreal.

So smog is more of a regional issue, but it's certainly an atmospheric issue that is created by the emissions that we emit to the atmosphere.

Now the next question is what is being done about these problems, and action is being taken on a national and international scene. There have been, or many of the industrial countries have extensive research projects looking into these matters to identify what is really happening, but there have been agreements reached, or agreements in the process of being reached.

In 1985 there was an agreement to reduce the sulphur dioxide emissions in Eastern Canada, and a group of countries, European countries; in 1988 there was agreement with respect to the reduction of nitrogen dioxides; currently there are discussions taking place and further studies on reducing carbon dioxide.

And of course research, as I said

before, is continuing on in many places to further assess these particular matters.

How does Alberta fit into this total scene? Well to begin with these gases, which are a major source of greenhouse gases, arise from the burning of fossil fuels, and Alberta has, as you know, a substantial storehouse or inventory of that fossil fuel.

Currently, our production of gas is about 83 percent of the Canadian production; our production of oil, and that's conventional oil and oil sands oil or synthetic crude oil, is about 80 percent of total Canadian production; and our coal production is about 44 percent. So Canada is a major player in terms of the production of fossil fuels.

But Alberta is also a major player in terms of the consumption of fuels, in part because the fuels are used in the production process. For example, in terms of producing synthetic crude oil, you have to use a tremendous amount of energy, so that energy results in burning fossil fuels. Alberta's share of Canada's emissions of sulphur dioxides is 15 percent. Our population, of course, is roughly 10 percent. In terms of nitrogen dioxide, it's 23 percent; carbon dioxide it's 22 percent.

So on a per capita basis, Alberta is the highest per capita consumer in Canada, and Canada itself is a high per capita emitter of these gases.

We also have to recognize, however, that 75 percent of Alberta's oil and gas is sold beyond the province, either in markets in other parts of Canada or in the United States. So that really means that, in a sense, some of those emissions, the emissions that arise from the production of fossil fuels, really take place on behalf of the other areas, the other consuming areas, in either Canada or the United States.

In terms of world emissions, Canada's share of the carbon dioxide emissions is only 2 percent, so relating that 2 percent to the carbon dioxide emissions from, or Alberta's share of Canada's emissions, roughly a quarter, it means that, really, Alberta's share of the world emissions is about half a percent, and that is probably part of the reason that there is difficulty in coming to grips with the question of clean air and a Clean Air Strategy, because the shares of local areas are so relatively small in terms of the total.

The fossil fuels are very important in terms of the Alberta economy, and of course we have to be conscious of the other side of the equation. The value of fossil fuels in 1989 was about $15 billion. $2.4 billion went to the Provincial

Government in the form of royalties, which was about 25, 24 or 25 percent of the total government revenues. So, obviously, that issue is important.

Furthermore, direct and indirect employment in the fossil fuel industry is about a quarter of a million people, so that's a substantial portion of the total labour force.

When you look at the question of emissions, you quickly see that we are all involved in it. Sometimes, in environmental matters, we can point the finger at somebody else and life is a little easier for us under those circumstances, but in this case, we all play a role, and this applies particularly to carbon dioxide and nitrogen oxides. The energy industry accounts for about a third of the emissions, the other industry accounts for about a third, and then the general public, all of us, you and I, account for the other third. And of course we all drive automobiles, we all heat our homes, we do the various things in terms of consuming fossil fuels.

An important question in this whole process is considering what we really mean by "clean air". I think it's fair to say that, historically, we have meant air that didn't contain sufficient contaminants to cause health problems to humans, or vegetation problems, or health problems for animals. That's probably too narrow a definition in terms of today's world in thinking in terms of the kinds of issues that I was talking about, particularly the greenhouse effect, because those issues, those problems, are long-term, and even if one made the assumption, and I imagine that some people might not agree with this assumption but putting that to one side, if we agreed that the air that we are breathing today in Alberta is clean, that doesn't mean that we are not causing future problems for our children and our grandchildren in terms of the emissions that go into the atmosphere, the so-called greenhouse effect, because if the research scientists are right that the world is warming as a result of that and we have melting of polar ice caps and we have increasingly extreme weather conditions and changing atmospheric conditions in that form, those problems present long-term issues to us, and consequently they really bring into focus the fundamental question of what do we mean by clean air, for what period; is it today, or is it 50 years from now, or 100 years from now.

Now, assuming that we accept the concept that we need to reduce emissions to the atmosphere, I think it's fair to say that there are four basic alternatives. Thinking in terms of Alberta, we can produce less energy. For example, if we decided to shut down the oil sands plants or we decided not to have any more oil sands plants, we would reduce the emissions to the atmosphere. Of course the economic consequences would be rather severe, but that would be one way of reducing emissions.

A second way would be for us, all of us, to use less energy, if we simply walked instead of drove, for example.

Another alternative is to use the energy more efficiently in terms of our activities. Instead of getting X kilometers from a liter of gas, we could get X plus ten under a different kind of system with new technology.

Another way is to shift to non-polluting energy sources.

So there are these four basic alternatives but there are -- each of them, of course, has a wide variety of subsets that one can look at.

We then come to the question of how can we, as individuals, reduce emissions, and that's the core of why we are here, why we are having these regional meetings, because we want to get your suggestions. Your suggestions will go forward to the workshop that will be held early next year, in the spring of next year, and will be discussed at that time.

We recognize that education is a

major factor in this whole issue. Susie and I have been talking about this today, about the limited response that we have had in the communities that we have been in to date, and one of our conclusions is that there probably isn't enough education in the general public about these particular problems. But you run into the question of how can this be achieved, how can we become convinced that we, as individuals, need to change our lifestyles in order to protect the environment for future generations.

We are hoping to develop policies and programs that will result in an effective Clean Air Strategy, and as I said before, your suggestions in terms of developing that strategy are a key element.

Some possible elements of a Clean Air Strategy might be to adopt new standards; to limit total emissions for an area, sometimes called an airshed; or to develop or to provide new incentives for new technology; and another alternative that receives a lot of consideration is to provide financial incentives for people to restrict their activity in terms of emissions; and of course the perennial need for further research so that we can understand the problem better.

Well that provides, in a way, a rough overview of what we are talking about, what we are thinking about in terms of a Clean Air Strategy. As I said before, we haven't been terribly successful in getting a wide audience to our meetings to date. I might say that this group is larger than we have had, and we appreciate everyone coming out on a stormy night, but I think we can have some good discussion this evening.

I believe we only have one person that wants to make a submission, but there may be others that do want to, and we will certainly accept them, and after we have finished with the submissions, I think we can have some dialogue and exchange some views, we can probably pose some questions and see what your reactions are to those particular questions.

So without further ado, let me call upon the first person to make a presentation, and it's John Sheehan. Is John present?

JOHN SHEEHAN: Yes, thank you. I wasn't exactly sure what format this meeting would take place in, but I will give it my best shot here anyway. There's been so many things happening lately that I am limited, in time, to be able to prepare.

This submission is not only on my own behalf, but it's also going to be on behalf of Friends of the Peace.

One point I would like to mention that was brought up earlier about the poor turnout, I wouldn't say this is particularly poor here, but as you mentioned in other areas it might not be quite as good. I don't think that it should be attributed necessarily to public apathy. The public is quite concerned about environmental issues and are becoming more environmentally conscious all the time.

I think one of the problems is that there is a vast amount of time involved in becoming environmentally conscious and to have a specific knowledge that you want to get up and address to a hearing such as this. It's fairly difficult to, you know, collect all the information and then feel comfortable with presenting it to the public, but I believe the public will support ways and methods of conserving energy and protecting the environment.

Alternatives have been, like energy alternatives that is, clean alternatives in terms of methods of generating energy without creating pollution and energy conservation techniques have been well-known, and myself, I know at least 15 or 20 years that there's been many different forms of alternative energies that have been given support, but basically by a small number of people who have taken the time to really delve into the situation, but it's been fairly unfortunate, I believe, that our governments really haven't supported and haven't spent much time and effort into developing, or helping to develop with the public.

To use an example, the nuclear industry has received billions of dollars from all across Canada, whereas I think the statistic 15 or 20 years ago was that it was less than 1 percent of the Energy, Mines and Resources' budget was actually going towards promoting alternatives or energy conservation. So I think, myself, that was quite a significant mistake on behalf of the federal governments.

Another point of energy conservation. Amour Lovins, who is an alternative energy expert and founded the Rocky Mountain Institute in the United States, equated conservation costs to the equivalent of a $3 barrel of oil. Now we are looking into all sorts of alternatives, and many of them are much more expensive than the equivalent of a $3 barrel of oil, as oil today is much more expensive than that, and had we taken the initiative 15 or 20 years ago, I think we could have seen many savings to the environment, and to our own economy for that matter, and I believe there has to be a certain amount of pressure placed on Energy, Mines and Resources by the public of Canada and also by Alberta to support clean alternative energy sources, but especially towards conservation. I think that's where the key is.

Another quote that I have heard

is that North Americans can cut their energy consumption by roughly 60 percent without affecting our lifestyle currently, so that's a pretty significant amount.

I believe that Alberta has a very important role to play. Though we have a vast supply of fossil fuels, it's in our own best interests to conserve and avoid not only the damaging effects from their combustion, but for the long-term security, by having these substances around and still available for future generations as well, and especially also to consider the fact that these substances will increase in value as they become more scarce. So I think we have to take a long-term approach to this, and not just the short-term to reap the immediate economic benefits.

I think myself and many other people would suggest that a significant portion of our current royalties, being accrued from the export of fossil fuels and possibly other non-renewable resources, should be carefully utilized and invested in areas that would support, promote and develop energy conservation measures and clean energy alternatives.

A few points in looking at some of the handouts that came with the Clean Air Strategy package, I would just like to suggest in the residential area, I think house design, landscaping, and possibly the mention of solar water heaters and passive solar housing could be of quite a benefit in terms of the residential component involved in the Clean Air Strategy that I didn't really notice in the brochures.

Also, I would like to reiterate the point mentioned earlier about education. I believe that it's critical to ensure that energy conservation is given the priority necessary to protect the environment and direct our society towards a more sustainable future. The public who directly use about 15 percent of Alberta's energy, and industry who consume roughly 85 percent, must understand why energy conservation and the development of clean alternatives are necessary, and to be involved in developing strategies to work towards this objective. I believe the Alberta Government must help educate and facilitate planning, as well as help with the public and industry, to develop and implement this type of a strategy and public education.

I worked for the office of Energy Conservation for approximately nine months in 1978 to help promote energy and resource conservation, and at that time, the importance was recognized regarding non-renewable energy depletion and the resulting pollution that comes from the consumption and combustion of fossil fuels. Energy conservation and alternative energy sources were known at that time and being studied by many of -- with many of the best examples coming from the public in general.

In this particular project, we would go out and look at what the people, just on their own initiatives, were doing, and many people, you know, without much information from others, were just experimenting and doing things on their own and learning from that, and it was just sort of a word of mouth sort of a situation, and I found it very informative to be able to have that opportunity and to explore those types of things, whereas on the other hand I was looking at some of the other information -- I don't want to try to be critical of the government all the time -- but it was, I found the government, at that point in time, was more or less looking at more towards the megaprojects or larger-scale ways of developing alternatives that would make it very difficult for the public to access. So I think it's very important, as I mentioned earlier, that the government work together with the public in trying to solve these problems, as well as with industry.

Now, it's almost 15 years later from that point in time that I was speaking about earlier, and we are virtually no farther ahead, we are not significantly much farther ahead on these issues as we were then. Had something been done then, and the government taken a little more initiative to help the public, at that point in time we may have been able to avoid going to war with Iraq today over the situation in the Middle East.

Now I believe that our political system, and politicians, have been unable, not necessarily unwilling, to deal with the long-term issues and strategies due to their own short-term political interests. As everybody is aware, we have elections every four or five years, or whatever, and I think that's one of the problems with our system right now. Our politicians are geared towards getting themselves elected every four years, so consequently, there is not much of an incentive for them to take a long-term strategy towards developing things for the country that are really necessary, and what happens is the first two years they do all the very unpopular things, and then the second two years they spend all our money on maybe superfluous things that aren't really needed just to buy votes and get themselves re-elected, when what we really need is government, industry, and the public working together to develop a long-term strategy on these issues.

Now with the consequences of the greenhouse effect and global warming under way, it may be too late to prevent the potentially-devastating consequences that may result. I hope that is not true. But there really are no serious options left for the long-term future of the biosphere as we know it other than to immediately develop and implement strategies to address these problems, with the co-operation of everybody, and not partisan politics that collect power in the hands of a very few people, will be necessary if this plan is to succeed.

I would like to mention, at this point in time, a few of the local concerns regarding air quality issues. Actually, I had a question.

The Clean Air Strategy meetings are related to the environment as they relate to energy. I was just wondering about Clean Air Strategy as it relates to non-energy sources, or pollutants from non-energy-related issues. Is there a time frame, or will the Clean Air Strategy address those concerns at some point in the future?

MODERATOR MILLARD: Could anyone comment on that, Susie or Bob, or --

SUSIE WASHINGTON: My understanding is that the issues with respect to global warming and acid deposition, and certainly to a lesser extent smog, are really primarily related to the energy industry in Alberta, and that that is considered the first phase.

The second phase will deal with other issues, such as air toxics and other kinds of air quality problems related to other types of industry in the province, but this was seen as a first phase, partly in response to many of the international initiatives that the Federal Government is undertaking at the present time, but also in response to, I think, a Provincial, or a unique situation in the province in that we are the energy capital of Canada, and we have a global responsibility and we have a provincial responsibility. So a step at a time.

JOHN SHEEHAN: Right. I was just sort of curious, because there is a number of concerns locally about non-energy-related concerns.

SUSIE WASHINGTON: Exactly.

JOHN SHEEHAN: One of the things that I did want to mention in regard to clean air in a local situation, and it is energy-related to a certain extent, is with regard to the hog fuel boiler that Diashawa operates that generates power to provide to their plant, and in the hog fuel boiler they burn sludge from the pulping process to produce this energy.

The concern is that using the sludge that's been bleached in their mill to provide this energy requirement, there is a potential for the emission of chlorinated organic substances as well as other substances into the air, and that's a fairly substantial concern for many people locally, and it's never really been addressed. The questions that we have asked our government, we haven't really heard any responses. We have heard that these substances would be monitored for, but to our knowledge there is no intention of monitoring for chlorinated organic substances that are airborne. I understand it's fairly difficult to do that, but I know there is companies, even in Edmonton, that can take samples to measure, even in minute quantities, for substances such as dioxins and furans.

One of the concerns with the combustion and the incineration process, supposedly, according to the E.I.A. of Diashawa, they state that their incinerator will get to the temperature somewhere in the vicinity of 800 to 900 degrees Celcius, and consequently thoroughly combust all these chlorinated compounds, but there is a few points that haven't really been addressed.

One is when the mill shuts down and the incinerator isn't working at full capacity and they are venting the gases, are chlorinated organics being emitted at that point in time?

The other concern is that if there is a high water vapour throughput in their hog fuel boiler, in other words if there is a lot of water vapour coming off this process, would these chlorinated substances be whisked out of the stack prior to the proper retention time in the hog fuel boiler to combust these materials.

And another point is even if you are able to break down and incinerate these chlorinated organic substances, you are never going to be able to break down the chlorine atom short of a nuclear reaction, which I don't think too many people would support anyway, but one of the concerns with that is that, since there is chlorine atoms going to be coming from this process, what is -- after it leaves the stack it recombines, the potential is there to recombine with particulates and sulphur compounds and other substances, and what is going to be the end result of these substances. So that's another concern. We know that chlorinated compounds are very toxic and carcinogenic, bio-accumulate in the food chain, so we are hoping that we are not breathing very many of these, if any of them, locally. So that's a very important concern for us, and that relates to this Clean Air Strategy, since energy is being produced by the firing of the hog fuel boiler.

And I guess I would like to reiterate the point that we think it's very important and necessary that monitoring take place for these substances because of the substantial health impacts of the potential from these substances.

I would like to make mention to a

report or a document that the Alberta Medical Association or I should say, excuse me, the American Lung Association put out to back my point. This is in relation to the recovery boiler. They state the recovery boiler uses too much -- when it uses too:

> "...much excess oxygen can produce sulfuric acid aerosol. If chlorine wastes from the production of chlorine dioxide mixed with black liquor prior to burning in the recovery boiler, the recovery boiler may have the potential to produce highly toxic chlorinated dibenzo-dioxins and dibenzo-furans."

So those were a couple of the substances that we were concerned with here as well.

But having said that, I would like to thank Alberta Environment and the people here tonight for giving us the opportunity, and the members of the public at large, the opportunity to find out and become more informed about these situations. I think it's something that's long overdue, and we appreciate the opportunity to make a presentation, that is myself on behalf of Friends of the Peace, and we hope that the government will take our suggestions and work together with public and industry to create a long-term strategy that will help address the concerns in general with the Clean Air Strategy. Thank you.

MODERATOR MILLARD: Thank you. Are there any other submissions? Anyone like to make one?

CLAUS: Yeah, I have got a few words to say concerning, like this whole thing is concerned about clean air on this whole planet and not just on the local area, not just in Canada or on the North American continent, so we have had the issues of the local facility doing certain environmental damages to our direct living environment, but now we should look at the fact that what this is using.

We are talking about CO/2 as being one of the major greenhouse gases. Now, if we look at the woods here in Northern Alberta or in B.C., or if we go all the way across Canada, it's one of our major resources as far as we call it, renewable resources.

Now there is billions of tonnes of trees out there made out of water and carbon that are being turned over into pulp, into, in this case, pulp, or in other cases oxygen, or just being knocked down in order to clear more land for raising cattle, or whatever mainly we do with it, so we are taking this carbon and turning it into carbon dioxide, not thinking about how long it's going to take this carbon dioxide to come back down and turn into carbon in the form of a tree or another plant again.

So on top of that, these trees are being a major regulatory factor in the earth's climate. Since you, you must know it too, it was not shown in your diagram, to give everybody this information, every year the CO/2 content of the atmosphere goes up and down as the plants absorb a whole lot of the carbon dioxide out of the atmosphere in order to grow and then release it again as they decay over the winter, and this process goes on and on. Now as we are taking more of this biomass, active biomass, and turning it into CO/2, we are lowering this regulatory factor, and all we know is we are doing it. We don't have a clue what kind of consequence it has.

Now you had your alternatives, using less energy. If we would consider that within the next 100 years we would only want to reach about 3 degrees of global warming, we would have to theoretically, as far as scientists are concerned, about 2050, cut down by 90 percent of the emissions. In general we are talking about our third of the public, the third of the energy production, and the third of other industry. In order to do this, we are going to have a very hard time.

So what the government, as far as I am concerned, should definitely do is not allow any kind of production of any goods or energy if it's not up to state-of-the-art equipment. I mean we are looking at a Peace River pulp mill that is producing under circumstances that should not even be allowed any more. This pulp mill would have no chance of being legal in Europe. If they tried to put that machine there, people would raise more than -- they would raise hell.

We are talking about an incineration plant in Swan Hills for toxic substances that are just going to get incinerated and blown into the atmosphere, but we don't know yet what they are going to do.

I mean we consider ourselves the Homo Sapiens, we should be able to think, so we should think first before we do it, and we should have our government representing ourselves in that direction, that we should not allow anything that's not up to full capacity, full efficiency rate as far as we are concerned, with our so-called high technology.

Well those are a few things. I have got more to say.

MODERATOR MILLARD: Thank you. What's your name, please?

CLAUS: Claus, C-L-A-U-S.

MODERATOR MILLARD: Any other comments?

ROXANNE: Yeah, I would like to say something. Okay. I would like to talk about energy, since this thing is about it, and in my idea there is, there should be a conversion to something that wouldn't create any pollution at all, and that thing exists and it's been there for years and years, and I am still surprised to see that nobody cares or not even talks about it, and it's the using hydrogen.

When you put hydrogen in contact with oxygen, it creates an explosion, and it's already been there, there is lots of engines work like that, and the only thing that comes out of the excess -- whatever, you could use it to heat a house or make light, move engines, whatever, it doesn't matter -- and the only thing that comes out of the excess, that's water, therefore that doesn't touch the environment in any way. Okay.

You can create the friction, and the thing moving going to still create some heat, but at least in terms of toxic substances that would be generated it would be pretty clean, it would stay there.

And I think we are really lacking in this country because there is lots of way to do hydrogen, and just a waste of electricity in dams because they are built for the rush-hour demands, so at night this electricity is wasted because they can't shut the turbines, or whatever you call them, and it would be very easy to make electrolyzers and store that hydrogen when that electricity, it's not used, and then use that hydrogen to maybe create electricity again by making a vapour engine.

And there is lots of things that can be done like that, and I don't know, I hope that people who have money would, like who have more money than they need, they have got to do something, because I don't.

MODERATOR MILLARD: Thank you.

ROXANNE: Okay.

MODERATOR MILLARD: Your name, please?

ROXANNE: Roxanne.

MODERATOR MILLARD: Thank you. Any other that anyone else wishes to make?

Any other comments anyone else would like to make? Does anyone wish to simply talk about some of the issues that we have been raising?

For example, we have talked about what we mean by clean air, for example. What does anyone, what do you think we should be using as a definition of clean air as a standard?

JOHN SHEEHAN: That's pretty tough.

MODERATOR MILLARD: Maybe we will try another one then.

JOHN SHEEHAN: Well, I don't know, I guess what I, my impression would be something that doesn't have any immediate or long-term health effects on people, animals, or the natural environment, I suppose, just sort of as a --

MODERATOR MILLARD: And you include the long-term in that?

JOHN SHEEHAN: Yes, the long-term, definitely, immediate and long-term.

MODERATOR MILLARD: Yes.

JOHN SHEEHAN: I did have a question, though, relating to your previous presentation. You were mentioning about acid rain. Do you know what the pH of normal or non-acidified rainwater would be normally?

MODERATOR MILLARD: I have seen the numbers, but I am sure somebody from Environment would be better.

SUSIE WASHINGTON: We have got a fact sheet.

MODERATOR MILLARD: Good. What is it, 5.4?

JOHN SHEEHAN: I know 7 is neutral, but I didn't know what the pH of rainwater was, or should be normally.

SUSIE WASHINGTON: 7.

MODERATOR MILLARD: 7?

JOHN SHEEHAN: 7? Okay. The reason why I mentioned that is I was watching a newscast and, or I should say a weather report on some channel, cable channel from somewhere or other, and it was kind of interesting because they gave the acidity of the rainwater with their weather forecast, something that I am not really familiar with, and this was in Ontario in Eastern Canada, and a few points in Central Ontario the acid was ranging, or the pH of the rain was ranging from 4.2 to 4.6, and then there was a place in I think, I believe in Nova Scotia, where the pH was actually 3.2 of the rainfall. Now when you get a pH that low and that acidic, that's a fairly scary scenario to be depositing in the environment and on people.

I am just trying to get some perspective on that.

MODERATOR MILLARD: Yes, yes. Those fact sheets are really very good. They are well worth reading. I would commend them.

BOB MITCHELL: Excuse me, Vern?

MODERATOR MILLARD: Yes?

BOB MITCHELL: On the back of the fact sheets there are a list of other information that you can call the Department and we will mail to you. You can phone or write us, and we will send out anything that you need on -- that are listed there.

MODERATOR MILLARD: Did everyone hear Bob when he said that? Why don't you say it again, Bob, just so people can --

BOB MITCHELL: Okay. On the back of all of the blue fact sheets are lists of supplementary information that you can call the Department and we will send out to you. There is an awful lot more on things like SO/2 emissions, CO/2 inventory studies, CO/2 reduction study, a nitrogen oxide inventory study, things like that. If you are interested, they are good reading.

JOHN SHEEHAN: If I can make one more comment, I guess normal rain, neutral is 7 but normal rain is actually 5.6, and just to put that into perspective, orange juice is 4 and vinegar is 3, so the rain that was falling in Nova Scotia yesterday or a couple days ago was very close to being the same acidity as vinegar, and what was falling in Ontario was just a little less acidic than orange juice, just to give you some idea.

MODERATOR MILLARD: Let me try another question. How many of those in attendance this evening tend to think that we have a future problem with respect to global warming or what I call the greenhouse effect?

ROXANNE: I couldn't hear the question?

MODERATOR MILLARD: Sorry. How many of those in attendance tonight believe that we have a problem, or a future problem, with respect to global warming or so-called greenhouse effect? So I guess that's a pretty universal recognition, and quite frankly we weren't -- when we had small attendance, we weren't sure whether, if one of the factors was that people didn't think there was a problem.

Well, recognizing that there is agreement that there is a problem how, what kind of actions would you think should be taken to reduce emissions to avoid the warming of the atmosphere? Do you have some specific thoughts that you might put forward? Yes?

ROXANNE: Yeah. I would say to encourage the people to save in emissions, like to encourage them to do, like instead of being one person in the car to be more people and to, for to take easier ways to reduce first. Like technology changes take a long time and lots of money, but there is easy things that anybody could do, that if everybody would do, it would go, it would make a big difference already.

MODERATOR MILLARD: Would you like to see a list of such things so that you could review them and implement them?

ROXANNE: I think television, the television media are using, right now there is 90 percent of bullshit and brainwash and there is a little bit of information, and it should be reversed. There should be 90 percent of information and 10 percent of bullshit.

And that's really bad, like pisses me off, because the situation, it's really like extreme, and you can't go back, so how come that there is -- you can, because television is the main thing that it's everywhere with computers, and those two things should be there to help, not to promote more waste and more ignorance, and I don't know what can be done for that, like because it's going to take money to have one station completely devoted to make things go better.

CLAUS: Well you can, for example, start with simple things, like start with the idea of instead of giving a rebate for using lots of power, make it more expensive.

If somebody, instead of using 100 kilowatt-hours, he has a big outfit, well he's charging more money, charge him double. Why not? The guy is going to think about it twice, about using all this power, and he's going to think about a heat exchanger and saving him an extra 1,000 kilowatt-hours a day on the heat of that room or this and that. He might think about it twice. You have to charge the people that are in charge of the facilities, the people that own it, the people that have the money to their leisure.

I mean we are being given one of the biggest countries in this world to our leisure. We are only 20 million people, which is a very small amount of the population on this planet, so we have to think of responsibility. We can't just think in terms of a new VCR or a new car. We have to think in terms of not taking this and wasting it, because after all, we have rented it from our grandchildren, and every one of you, like your grandchildren are already there, mine are not, that's the only difference, but you have rented it from my children and I have rented it from my grandchildren.

So there is a lot of things. You could look at it simple. Put transportation into employer's hands so people don't have to get to work. The employer has X amount of employees, he gets one vehicle and drives them all around, well make him pay them for the time. Simple things like that. Instead of moving 20 vehicles to one shop you move one vehicle from that shop and make him cruise once around. There you go. Easy things. That way you are avoiding.

Like Alberta is emitting lots of CO/2, but look at the conditions that there are in this province. You end up, in the wintertime, using a lot more fuel than you do in the summertime, so make things more efficient, make things a little bit better for people. Give them -- like since we have a very pathologic public in Alberta in general, make it very easy for them, give them a quick cash thing, you know. That's what people are going to go for.

You want to share the ride to work, well it's an instant $100 off your income tax. Simple. If you can prove that you rode with your neighbour, you get $100 off at the end of the year, really an easy, simple thing, but of course it means cutting out long and complicated ways and not having everything go in a three-year way, because by then it has changed twice and it is outdated.

JAN DARLING: I think what a lot of people feel is that I am one person, you know, and whatever I do is not really going to impact too much on the environment, it's got to be everyone, and I think what we might look at is, in terms of getting new ideas, is looking at the younger kids who are definitely right into this idea of the environment, they are getting it at school, they are getting it from their parents, they are, you know, they have been raised with it this generation, and perhaps some wonderful ideas could be generated by the schools taking up the challenge to, for the science fairs and creating their science fairs around this whole idea, and for submission, in terms of thinking of submissions that could be made, then, from these fairs to your workshop that's going to happen in the spring. They are full of good ideas.

MODERATOR MILLARD: Yes.

CLAUS: Well the simple idea of using the media, as she mentioned, instead of using a lot of commercial time, our government should represent us in a way that they should say, well, the product that's obviously not of any use to the environment and that is definitely doing X and X amount of damage on its way of being produced should at least not be able to be promoted in our public air time, and instead of that we should use this air time to put you guys on the show.

Like, just tell people, because that's what people need. The TV in Canada, especially in Northern Alberta, Alberta in general, is a major source of information, so use it in a positive way.

Instead of telling people to use four-ply extra fluffy toilet paper, or to buy a car that's got a turbocharger, well, 6.6 seconds up to 100 kilometers, like who needs it. That's my speed limit, and I don't need 6.6 seconds, I can take 15 seconds. Everybody can do that. You know, just take a little more time in the path too.

ROXANNE: Like most of the planes, like it would be nice if -- same for the planes. How many times you see a plane, it's half empty? I mean if a plane was full, it wouldn't burn that much more fuel than if it was completely empty, so things like that would make big changes, and it would be cheaper for the plane companies too. I mean I don't know.

CLAUS: I think, in general, the unefficiency of our society, the use of a styrofoam cup, is ridiculous. We are looking at the fluorocarbohydrates that are being produced. For this styrofoam cup, that's what's being used to fluff it up. For the package for the hamburger at McDonald's, it's the same deal. It's ridiculous.

Our government should simply prohibit the kind of use of packages like that. I mean those fluorocarbohydrates take 15 years to rise into the stratosphere. The ozone layer hole that we have had developing since 1979 has only -- like this is 15-year-old gases that are doing the damage. The things that are out there today, they still take another 15 years to go up there, and since then we have produced production a ways over 1,000 percent.

Like if we are lucky, what we are facing here, we have still got 15 years of the ozone layer opening if we stop instant now, but North American car manufacturers are not about to use water as a paint thinner like European ones do, they still use the old paint thinner. Those are thousands and thousands of tonnes of this thing thrown out there, and for the next 15 years on their way up there, and our government is allowing it, all these little things.

ROXANNE: The standards are -- I mean it causes -- it's cheaper, sometimes, to pay a fine if you are polluting in this country than it would be to convert what's wrong. Instead, if it was the reverse, they would -- it would be cheaper for the company to convert to be clean instead of paying the fine.

ELIZABETH GARDNER: I think you have to lower your educational expectations.

You are talking about the future being our children and grandchildren, but you are talking about conservation and concerns that are beyond their understanding, that in the job of education you have got to get things to the level that they can deal with; collecting a newspaper every day and keeping it in your classroom. By the end of the year you have moved that stack of paper I don't know how many times, but try to get the idea that all that paper adds up to X number of trees, so how many forests are we talking about is where we have to start to aim our goals for educating.

I don't know if, in curriculum, you have any input, but in the Grade 6 Social Studies they are talking, now, Canadian Government, and one of the things that they need to encourage there is to have questions such as how does this question affect the environment as far as the Canadian government is concerned, the people and us, and those kinds of things have to really be shot in the arm, and they are not.

JAN DARLING: I think at this point, too, a lot of issues deal with big business. We know that styrofoam cups are environmentally unsafe, but somewhere there is a company that makes those and government is not a dictatorship, it's not going to say, unless you can absolutely prove right down that that's going to be poisonous and somebody is going to die tomorrow, you are not going to get a government law against providing something like that. It's not instantaneous like that.

Same with diapers, you know. I mean that's big business, and it's dollars and cents, and perhaps government agencies just have to crack down and get a little tougher for the future.

ROXANNE: I would like to, this is an idea of mine I would really like to see one day happen, is if you take human power as energy. I would like, really, to see programs like you take inmates, make them tree plant, and they would be, like they would be paid the same price any tree planter would be paid but not get the money right away so that when they come out they have been planting trees and they get a bit of money to start in life with something instead of being nothing. And there is so much power there. Those people are fed and everything, they are there, they are just sleeping and getting sick, and why couldn't they be put in the bush and tree plant and make oxygen instead of sitting there and just getting wasted, like.

MODERATOR MILLARD: Other ideas? Does anyone have anything further?

JOE STEPANIUK: Vern, I would like to mention something.

This lady was talking about education here. We have got probably eight booths around here. Not a single school class came through. This is an ideal place to learn Clean Air Strategy, yet we did not have our educators bring one class through here, and that's really disappointing.

I donated my personal time and my company's time to come and help explain our position, but we did not have any students to listen.

JOHN SHEEHAN: Maybe there is a greater need for promotion of this type of an activity better.

JAN DARLING: Certainly, it's not the teachers' fault. It's, you know, one teacher might be interested in doing this, but if it doesn't fit in with your day's agenda or your principal can't free up a bus to get the kids down here, you know, I mean there is probably 12 to 15 different reasons -- well maybe not that many -- there is five or six reasons that the kids, you know, didn't come.

I think someone said better promotion might be the answer so that this can be worked in. I agree with you, I really do.

JOE STEPANIUK: How far are we from the nearest school, from here?

ELIZABETH GARDNER: Walking distance. Quarter of a mile.

JOE STEPANIUK: We really, as parents, did not make the effort to tell our educators to say we have got a problem, let's go correct it, send the kids. Where do they learn, this is the best place to learn. Industry is here, everybody is here basically represented, and we had no students.

ELIZABETH GARDNER: Perhaps it could have been better advertised. I had to phone one place to find out in which of three locations it might be.

CLAUS: Well if you consider, we are not here right now to teach our kids, right now we are here to make suggestions.

We are spending a lot of government money doing this. I'm making the suggestion, I mean this evening, tonight is costing a lot of money out of national taxpayers' pockets, and we should make it worth it, and I don't think it would be the right point in time tonight on having a class of students here, even though they might have really interesting suggestions to our discussion, but I think it would be...

Why not make it one department at school? Like we teach our kids physics, we teach our kids chemistry, we teach them English, French. Why not teach them environment six hours a week? Therefore we would be able to catch up really quick. All it would take is, from Grade 1 on, you give them environment lessons. You teach them what it's all about to have a home compost, little things like that, you know, teach the kids right in school, because we will have to get it to them somehow. We will have to get this information in their heads. Besides the fact that you can just burn it, we have to let them know what happens after you burn it.

So the education is not to take place now, the education is not to take place in that way even on a voluntary basis. I mean our kids don't have the choice whether they want to learn physics or not, they have to be there, and that's the way I would look at it, is I would teach them about the environment. Whether they want or not, as long as they are in school, they are going to have to listen to it.

JOE STEPANIUK: To legislate things upon people is wrong, it's a wrong way of doing business, a wrong way of doing anything. We are freedom of choice in this country.

CLAUS: Oh yeah, but I mean --

JOE STEPANIUK: You start with your children.

CLAUSE: Oh yeah, but I mean like I said, the kids have to learn about physics.

JOE STEPANIUK: We just can't arbitrarily say we did away with McDonald's styrofoam cups. Even though we dislike them, we as consumers should have the right to say "no", not legislation.

CLAUS: No, because the average consumer does not have, he does not have the kind of information. The average consumer does not know that it takes fluorocarbohydrates to blow up a styrofoam cup. The average consumer goes into a store and he sees, wow, 25 cups for $1.25, right on, I'll buy it.

Instead of paying more money for something like --

JOE STEPANIUK: Our average consumer is not that ignorant. He makes the logical choice. He wants to go to McDonalds because it's cheaper.

CLAUS: Let's say you take an average teenager out of Peace River who dropped out of highschool at Grade 9 and is now 16 years old with two children. Do you really expect this child to have the necessary schooling to be able to tell that this styrofoam cup, that is really cheap and really convenient at the time and doing the job just perfect, is actually something really poisionous to the environment? Like, you should not leave the choice up to a person who is unqualified to make the choice. We, as the qualified people, have to make this choice.

JOE STEPANIUK: Then you are playing God. You can't do that. He has to be allowed his choice.

CLAUS: We have to leave the option, like in this case we can count the option out. They can make a paper cup that can do the same job.

ROXANNE: There is not enough time to get everybody qualified to do the job, that's the problem, to do the choice. If everybody had to know exactly what was happening to do the choice, it would take so many years that by then the choice, we wouldn't need it any more, it would be already too late.

There is too many people, like just the third-world countries are going to start getting the old cars that these countries don't want any more that pollute five times as much as, or use five times as much gas, so now people are getting more conscious in the industrialized countries and they are trying to do better, but meanwhile all these third-world countries, they are getting to get their car and everything, and even here we are going to smog, the emissions, over there they are just making mega, they are starting to do more.

So like there is a really -- it has to be something that's going to come from all over the world, an agreement that -- I don't know how it's going to go, but it's scary.

MODERATOR MILLARD: That's one of the real challenges, isn't it?

CLAUS: We can take like a real simple example for choices.

I mean nobody in this room has been asked, and I am positive about it, whether Canada should go to war or not, or at least has not had any decisive power on that particular decision. This decision has been made by a politician without asking this particular person, so we can make the decision on saying the styrofoam cup produces fluorocarbohydrates, it produces these things, we cannot have these things, we just cannot have them if we want to be responsible citizens of this planet, so we don't make them.

We have to recognize these factors, we have to look at the products that we use in life, because the way we live life has not been the traditional way of our society of living, like we have not used plastics for a very long time.

And the amount of use, like we are looking at, every four years, a gross product of goods that's as much as from the beginning of mankind to 1950, so every four years we are punching out more stuff, the same amount as from the beginning of industrialization until 1950. That's including two world wars. This is general turnover of goods, and with the goods, of course, the energy.

And we were looking at, you were saying, a future problem, the global warming is already being a problem if you look in the last year; five hurricanes in Europe being caused by the cold air reaching back up further north and producing the tunnel where those five hurricanes got spun off one after another. That's only thanks to the fact that 15 percent of the ice on the north polar cap has melted since 1976.

We don't know how many trees Europe is going to lose now. Last year they lost 10 percent in one winter. Now who is to be blamed for this? Who is to pay for all these roofs that got destroyed? Who is, if you reach further back you always -- so since you can't pay back, like you cannot say well, you guys 20 years ago used up this power and caused this water to melt so I want you to pay for my new roof now, you cannot do that. But you can sit down and say well, before I put this out there I should better think whether, in 20 years, it might destroy somebody's house, because it just might, and that's what we should have a government for, in order to look into these issues and get qualified people to make these choices.

ROXANNE: Also a bigger question, what could be done with the people who obviously are going to have to lose their jobs because, I mean, half of what's in the markets, it's, I am sorry to say, totally, like nobody really needed it. It's not things that we really need in our lives. There is so many things that promote sickness, and they are just a waste, so much wrapping and everything, that you would wipe them completely out of the market, nobody would suffer. Contrary, everybody would feel better. Right?

And all these things have to stop, but then there is going to be so many people without the work, so it takes a really big operation of the country to make these people stay alive. I mean they are going to have to lose their jobs, and no matter what, it's going to happen eventually, because when it's going to get bad enough conditions people are going to stop buying these products because they are going to know, even if it's too late, that it's because of these things, stop buying them, and all these people are going to lose their jobs anyway, but it's going to be an even harder time, so there should be something done so that that change happens under control instead of completely out of control.

MODERATOR MILLARD: Are there any other points of view?

Well if not, let me say on behalf of all of us involved, thank you very much for coming out. We appreciate your comments and your participation and we will try and keep you informed about what is going on. Thanks again.

(Meeting adjourned at 8:35 p.m., Tuesday, November 13th, 1990)

COURT REPORTER'S CERTIFICATE:

I, Donald G. Meyer, CSR(A), Court Reporter, hereby certify that the foregoing pages contain a true and correct transcription of my shorthand notes taken herein, to the best of my knowledge, skill, and ability.

Donald G. Meyer CSR(A)
Donald G. Meyer, CSR(A)
Court Reporter

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ORIGINAL

CLEAN AIR STRATEGY FOR ALBERTA

Transcript of Proceedings

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Regional Meeting

Held at Edmonton, Alberta, on
Friday, November 16th, 1990

* *

Appearances:

Vern Millard -	Moderator
Susie Washington - and Kate Hoos	Western Environmental and Social Trends
Don Meyer, CSR(A) - and Louella Wood, CSR(A)	Court Reporters

Transcript of Proceedings

(Meeting commenced at 7:05 p.m., Friday, November 16th, 1990)

MODERATOR MILLARD: Can we start the meeting, please, ladies and gentlemen.

Well, let me say welcome to those attending this evening session. This is the fourth in a series of regional meetings. Last week, we were in Bonnyville and Fort McMurray. Earlier this week, we were in Peace River, and then, of course, tonight in Edmonton. My name is Vern Millard. I've been asked to moderate these meetings.

The purpose of the meeting is to get the views of citizens of Alberta from all different walks of life with respect to the question of the Clean Air Strategy. I have also been asked to make some introductory remarks, and in order to do that, I have reviewed the material that has been put together for the Clean Air Strategy, which, I must say, I found very helpful and interesting, and I would commend you for your reading. This is just a brief summary of the information that is in those fact sheets that have been prepared by the people working on the Clean Air Strategy.

Well, first of all, what is the Clean Air Strategy? And it really stems from the fact that our planet is becoming increasingly subject to problems. There is a growing consensus by the scientific community that emissions to the atmosphere must be reduced.

The Clean Air Strategy encourages public discussion. The Clean Air Strategy is designed to, first of all, identify most important issues, the most important issues, to develop practical approaches, to resolve the problems of emissions, and to recommend policies and programs to the Government.

It is a four-stage strategy. The first stage occurred in September of this year when a group of people that are involved in this kind of work, plus public interest groups, got together to discuss issues relating to the question of clean air, and that workshop identified a series of major issues.

The second stage are these eight regional meetings that are designed to give public citizens an opportunity to express their views.

The third stage will be another workshop that will take place in the spring of next year which will incorporate the views that have been expressed at the regional meetings and consider other issues that have evolved.

And then, finally, there will be a report prepared, which will go to the Government, primarily, the two main ministers involved in this, the

Minister of Energy and the Minister of Environment.

Now, what are the major problems? Before commenting on the three basic problems that exist, in general, one can say that continuing research is showing that there are major strains on our planet. For example, in November of this year, there was a conference in Geneva which 700 scientists attended to consider the question of global warming, and they came out with recommendations that suggested major reductions in emissions to the atmosphere.

Now, the greenhouse effect is one of the major issues that is evident in terms of this whole question of developing a clean air strategy. It's caused by carbon dioxide and other gases being emitted to the atmosphere. The gases trap energy radiated from the earth. Fossil fuels and water are the major contributors, and emissions occur in both the production of energy resources and also in their use.

This is a diagram that illustrates what does take place. There's naturally some emission to the atmosphere of gases and some radiation back to earth. As those gases build up, as they appear to have been doing over the last few decades, then the amount of heat that is radiated back to the earth increases; hence the problem. Fossil fuels are a major source. Oil, gas and water really create the issue and -- well, I think we'll go on to the next slide.

The second problem is acid deposition or so-called acid rain. The question has received a good deal of publicity over the last decade or so. We have all heard about Eastern Canada and Northeastern United States. We have heard about the situation in Alberta with emissions from sour gas plants and coal-fired plants and oil sands plants. The source of acid rain is sulphur oxides and nitrogen oxides being emitted to the atmosphere. And, of course, nitrogen oxides stem from industrial operations and from the use of automobiles, which we all indulge in.

Smog is a third major factor. It's not as big a factor in Alberta, but it has received a good deal of publicity in other areas. Nitrogen oxides are a major contributor. It appears in some degree in Calgary and Edmonton under certain atmospheric conditions.

What is being done about this situation? And we recognize it's a global situation. So action is being taken on an international basis. There was an agreement, an international agreement, on the reduction of sulphur oxides in 1985. There was another agreement on reduction of nitrogen oxides in 1988. Carbon dioxide reduction is in the process of being considered at the present time. And then, of course, research is a major factor in terms of understanding the problem to a better degree.

How does all of this affect Alberta? Well, because the emissions to the atmosphere are -- or because of emissions from fossil fuels are a major factor, it is important to recognize that Alberta is a major source of fossil fuels. On the Canadian scene, we produce about 83 percent of the gas produced in Canada, about 80 percent of the oil and 44 percent of the coal. Alberta's share of the emissions in Canada are 15 percent of sulphur dioxide, 23 percent or 22 percent of nitrogen dioxide, and about the same for carbon dioxide. Indeed, we have the highest per capita emission of both nitrogen dioxide and carbon dioxide in Canada.

We also have to recognize, though, that 75 percent of Alberta's oil and gas resources that are produced are sold in markets outside the province. Therefore, one might argue that we are contributing to the atmosphere the gases that relate to the development or the production of those resources but it's really on behalf of other people, of other consumers, in either other parts of Canada or in the United States.

Canada's share of the world CO/2

emissions is 2 percent, and if you relate that to Alberta's share of Canada, it leaves something like about half of 1 percent of Canada's emissions -- I mean of the world's emissions of CO/2 emanate from Canada.

We have to remember the importance of fossil fuels in Canada -- or in Alberta. The production of fossil fuels in 1989 represented a total value to the economy of $15.5 billion. 2.4 billion went to the Provincial Government in revenues, which represented 24 percent of the Provincial Government total revenues for that period. The industries employ about a quarter of a million people directly and indirectly.

Now, I hope that one of the factors that's come home is that we are all involved in this process. For example, in terms of CO/2 and NOx, about one-third of the emissions arise from the production of fossil fuels, another third arises from energy development in general, and then the remaining one-third stems from the actions of you and I when we drive our cars, when we eat at our homes, etcetera, when we use energy.

The kind of fundamental question that appears simple on the surface but is actually somewhat more complicated is what do we really mean by "clean air", "clean air" in the so-called Clean Air

Strategy? A simple definition is that it would mean air that doesn't have contaminants in it that will cause health problems for people or vegetation problems or problems for animals. But that really doesn't allow for the long-term effect of some of these issues like global warming that we were talking about previously.

For example, if one assumed that the air that we are breathing in Alberta today is clean -- and I know there might be some people who couldn't quite agree with that, but just for the purpose of this, let's assume that -- that doesn't mean that we don't really have a problem, because the emissions that are taking place, even with the production of clean air, still result in emissions to the atmosphere that can lead to this global warming and create the problems that stem from it over the long term, maybe two or three or four decades from now. Therefore, in terms of dealing with this issue, we must still reduce emissions, even though we have clean air, to avoid long-term global impacts. That's a main feature of understanding this particular problem.

Now, how can we reduce emissions? Well, there are really four basic alternatives. One is to reduce the production of energy. We could stop producing our oil sands reserves or vegetable oil or gas. Or we could use less energy, all of us. Or we could use the energy that we do require more efficiently. It goes further when you have less emissions. Or we could convert to non-polluting energy sources, such as solar or wind damming.

Then we come into the question of how can we as individuals reduce emissions? And that, of course, is the basic reason for these regional sessions. We want to get your suggestions and ideas and comments. Education certainly is a major factor, and that raises the question of how do we create that education. We have found, incidentally, I might say, that in the regional meetings that we have held, they really haven't been very well attended. This doesn't seem to be a major issue on the minds of the Alberta public.

How do we become convinced that we have to -- that this is a real problem and we have to change our lifestyles? That's another major, major question.

Now, the next issue is what policies and programs are required for an effective clean air strategy? Again, your suggestions are sought.

Some ideas that are mentioned here simply to promote consideration are we could establish new standards. We could limit total emissions in a particular area, some type of probably an airshed cap. We can provide incentives to develop new technology that would lead to more efficient use. We can change current financial incentives to -- so that -- some people might call it a more level playing field. And we can expand our research. And there are other suggestions that are certainly there and are not referred to here.

The important point is that, as I said before, we're all involved in this process together, and so we really need to find answers on a consensus basis. And we are looking for your ideas.

So, without further ado, I will proceed to call upon the people who made submissions and wish to speak to this matter.

Maybe the process we can follow, if this is satisfactory, is to -- maybe the person that's making the presentation, this microphone that you can just use as you see fit.

ROGER SILCOX: I guess that I'm the first guy, so --

MODERATOR MILLARD: Good. And this is Roger Silcox?

ROGER SILCOX: Yes. Yeah, my name is Roger Silcox, and I'm the first guy up here, so everybody else can practice and get their talk changed around so that they can talk a lot better than I do. I've got to use this.

Roger Silcox
Clean Air Synthetic Lubricants
Friday, November 16th, 1990

Okay, my name is Roger Silcox, and I am here basically as a citizen and sort of small-time entrepreneur, and I'm also a part-time consultant with the Society of Automotive Engineers, helping the fourth-year mechanical engineering students with their project card, their miles-per-gallon card that the universities compete all across the nation with on the building and whatever. I'm currently working with them right now in the use of synthetic lubricants.

Now, I'm pretty sure that most of you people don't even know what synthetic lubricants are. First of all, it has nothing to do with Syncrude Alberta. Syncrude is just basically the same old crude that has been synthetically removed from sand, so we're still back to square one.

Now, synthetic motor oils and how they relate to cleaner air: Most of you people, like I say, probably have never even seen a can of synthetic motor oil. It's been around for about 20 years in the United States and parts of Europe, but because of its exorbitant price -- it was about $11 a litre back in 1975; it has, of course, now come down in price and is more competitive -- but because of the expense, it was in a situation where people weren't using it very much, mainly because you could get oil for 99 cents, pump it out every 3,000 kilometers, and everybody is real happy.

We're now moving into a situation in life where we can't do that. And I just want to give you just a brief outline of what a synthetic is compared to -- I thought it was upside down -- what it is compared to conventional oil. Basically, it's not so much what's in synthetic oil but it's what's left out. And in conventional oils, you basically have a basic hodgepodge of various hydrocarbons, waxes, varnishes, sulphurs and other kinds of light and heavy materials. All these materials that are in conventional oil have various rates that they evaporate at, that is, they boil off. Some of the rates are so low that they're down in the area of well below the boiling point of water.

So, consequently, what I'm leading up to is the obvious situation where, as you drive, you are basically polluting the environment on a very large scale with all of these additives and extra hydrocarbons, varnishes, sulphur, waxes, etcetera, etcetera. And that's part of the reason why motor oils wear out; a lot of this stuff just disappears.

A synthetic, on the other hand, is made up of molecules that have been man-made, man-constructed, and they're a longer-chain molecule, which is much more stable and has a heat resistance factor of anywhere from two and a half to three times what regular motor oil has.

Now, how can this all relate to cleaner air? Well, the basic premise has already been realized by the Europeans. In Europe right now, any 10-40 oil that loses 13 percent of its weight or more during their volatility tests fails to meet the C.C.M.C. standards. The C.C.M.C is the Commonwealth Consortium of Manufacturing Countries. It's basically like the S.A.E. or the A.P.I., which is the American Petroleum Institute in the United States that sets the standard for emissions on oil.

Now, where that ties in to us here: Europe has seen fit to set a 13 percent standard for their oil products. This is from a test, a NoAck Volatility Test, I got out of an American magazine from Amsoil U.S.A., and it's been sanctioned by the S.A.E. This shows basically certain popular brands of oils that are on sale right now that people have to use in this province and across North America, and there doesn't seem to be any particular standard of evaporation or volatility. As you can see here, many of the oils lose anywhere from 20 percent to 25 percent of their weight by volume.

Now, I don't know how many of you guys can guess how much you lose with synthetic oils. Half maybe? Maybe more? How about 6 percent, maybe 8 percent. And where does all this oil go, this 24, 23 and 22 percent? It's going out the tail pipe. A lot of times when you check your oil level and you say, I'm down in oil, you're not down in oil at all, you're just down in all the additives that the oil companies have been jamming into the oil just to sort of help bring it up to a certain level at the time that the oil is new just to get it out the door. By the time the oil is at the end of its life, which is usually around the 3,000 kilometer level, the oil is no longer at that standard. Plus you're losing a lot out the pipe.

What this means is, with a 22 percent loss, you're losing one liter in five, whereas with a comparable synthetic, doing nothing else basically to an engine, you're only losing one-third of a litre out of five. Now, if you extrapolate this kind of difference, this two-thirds difference, over hundreds and thousands of motor vehicles in Alberta and in Canada, you can see that it means an awful lot as far as emissions go.

Now, let's touch for a moment on other features of synthetics, because some of them are quite startling to the average person. Synthetic oils, by their very nature, have a life span of between 20,000 and 160,000 kilometers, depending on what type of filtration you have. There is some motor trucks and taxi cabs running around in Canada and the United States that have their engines basically filled with oil once almost for the life of the vehicle, as compared to doing anywhere up to fifty to a hundred oil changes with regular type oil. So our waste oil is cut down significantly.

Another attribute of synthetic oil -- and this is a real nice one for Alberta -- is that it stays liquid down to colder temperatures than you'll ever go out to at work. And I've had personal experience with this, and it's quite astounding. What that leads down to is that not only are you using cold starts, but I checked with Edmonton Power, it costs 46 cents to plug your car in during the cold parts of the winter, based on an average of 14 hours a day, between work and between home, or people get home after work, plug it in, leave it in all night, and the next morning they take off for work.

With a synthetic oil, you don't have to do this. You can just plug in your battery, only 4 cents a night. Because the only reason we have block heaters in the first place is because we have yet to develop an oil that stays liquid at cold temperatures and yet you can still use it in the heat of hot summer weather. And I know that quick lube shops are going to be real mad at me for making this public, but they would just as soon have you dumping your oil every 3,000 kilometers.

Another situation is that conventional oil is lost from 285 degrees Fahrenheit on, it starts to smoke, and by 300 degrees, it's getting close to its fire point, in most cases. Synthetic is stone stable right up to 450 degrees Fahrenheit, which is 232 Celsius, which means that you can run your engines hotter with less wear and tear and less air pollution. We have had documented situations where in the United States the car will fail the E.P.A. tail pipe test, switch over to synthetic lubricants, come back two weeks later and they can pass it, and that's doing nothing but changing oil. And that I think makes a lot of sense when you're talking about clean air.

Another situation that we found is that, because of the tenacious oil film of synthetic, because it does stay stable throughout the life of the oil, it increases the longevity of engine parts, camshafts, hard surfaces and bearings, by anywhere from two to five times, particularly in cold starts. A lot of engines get started and the oil -- or the -- what has now become glue down in the oil pan doesn't even circulate for anywhere up to five minutes. Meanwhile, the components are upstairs spinning around like crazy, wearing out. You just ask anybody who owns an overhead cam engine; after about three years of cold winter starts, when they have to get the cam bearings replaced, how much fun that is. So there is an advantage to the pocket book, plus there's also an advantage to clean air, which, of course, this particular group is about.

And, last but not least, without question, we have yet to have anybody get worse mileage with synthetics, and some get as high as between 2 and 10 percent improvement, and that ain't all bad either.

The purpose of me being here is not so much to sell all you guys this stuff out in the hallway here but basically is just to get the knowledge out to the Government. I've already been to other areas of the Government, because I've got a lot of media guys bouncing up and down wanting stories on this, and I only thought it right that the Government get it first, then it go to the media.

But the environmental situation is here to stay; it's not a fad. Synthetic oils are here to stay; they're not a fad. They're coming, just as surely as radial tires took over cross-ply tires. So you heard it here and you heard it now.

And where can you get synthetic oil? You can get it at Canadian Tire, and you can get it from Mobil stations, and you can get it from Amsoil dealers, if you can find one.

Thank you very much.

MODERATOR MILLARD: Thank you.

Craig Schneider?

CRAIG SCHNEIDER: I just wanted to talk tonight a little bit about a couple of points that were mentioned already by the Moderator at the start. I looked at the priorities of this group, and I decided to concentrate mostly on greenhouse gases, specifically, carbon dioxide. I decided that there has been plenty said about acid deposition with the Acid Deposition Research Program, and much of the energy industry already have legislation that governs them, is already designed to control sulphur and nitrogen oxides and their emissions. Carbon dioxide is something that's relatively new and the worry about its contribution to global warming.

I'm not really going to mention too much about why I believe it's a problem. That's not really an issue of 15 minutes. I'm just going to -- apart from the idea that we have to do something about our rates of emission of carbon dioxide, assuming that it will cause an increase in the greenhouse effect and global climatic warming, the main idea I wanted to bring forward tonight was that efficiency increases and reduction of energy use caused by an increase in efficiency in our industry could be a very powerful technique for reducing the carbon dioxide emissions.

And one of the problems, I guess,

is that industry is -- I don't know if you could say industry would be slower to change than public attitudes. Probably both are a big problem, but industry is certainly more costly, and it will probably involve a fair bit of government nudging and economic consensus and that sort of thing.

And the idea that I want to propose mainly was something called industrial ecology. And I'm not even sure where the idea first got brought forward, but it's something I have discovered relatively recently. And the basic premise of it is that you treat industry in a given area, say a province or a country, the same way as you study the ecology that it's affecting.

And kind of an example of this is a given industry will always produce a product, but it also has a whole series of waste products as well. It's not just valuable products that come out the end. And many industries use primary natural resources as the input, but other industries don't use natural resources or primary resources as the input, they use secondary resources, which can in some cases be the waste from another industry, and given that some of the -- a lot of the wastes are mostly toxic and nobody needs them, right, but one of the biggest wastes that comes out of many industries is thermal energy, and it's just in a lot of cases not economical to improve the efficiency of the original process, be it a gas plant or a coal-fired electrical plant, and so a lot of heat just goes out the old stack.

And I guess I should mention why I got on to this, and I'll kind of lead into an example of an industrial ecology.

I saw in the media a report about a gentleman who was trying to sell some small electric generators to the oil and gas industry and put them on their flare gas -- their gas flares, and he claimed that you could almost economically generate electricity by running these electric generators off the flare that was just essentially burning gas -- waste gas and creating heat and a bright light in the night.

The problem was that the cost of creating the energy, by the time you paid the provincial royalty on gas, was greater than it would cost to create energy at Genesee or Sundance or one of the coal-fired plants. And this gentleman was basically asking the Government for a break on royalties charged on waste gas. And the problem with that as the Province sees it, of course, is that waste -- any gas should be charged a royalty, but it's only charged a royalty if it's actually used, okay? If you burn it as a waste product, it's not charged, the royalty isn't applied, as far as I can understand. And so this gentleman was trying to claim that, well, if they're just going to throw it out anyway, why not waive the royalty and we'll get some electricity out of it.

And I guess the example of that being an industrial ecology situation was that here was an industry that could run off the waste of another industry and thereby reduce the amount of carbon dioxide produced in the secondary industry, that producing the electricity. He would more or less put a little bit of the coal generation out of business by running electricity off these gas flares.

And so here you have a bit of a stand-off. The Province doesn't want to reduce the royalties for this situation, because then you get into a question of, well, what deserves to be not produced and what deserves to be charged.

And I more or less saw two ways out of that problem. One was to look at it in terms of, first of all, why is it not economical, even with a royalty on there? I mean, should it be cheap to burn coal to make energy, cheaper than burning natural gas to make energy, for example?

And maybe one of the problems with it not being economically viable was that the coal was actually underpriced, we weren't paying the full price, the full cost of generating the electricity by coal. Coal, as many of you may know, actually has a very high carbon dioxide -- I guess factor, they call it, which means that, when you burn coal, you get a lot of carbon dioxide relative to if you burn natural gas. It's almost twice as much, I believe.

Another way of looking at it is the way the gentleman was looking at it, was why charge a royalty on something that's just being wasted anyway, why not, for example, make it an incentive to create electricity out of this -- these gas flares? And his point was that you could in some way charge the royalty, either reduce the royalty or subsidize the cost of the electricity and thereby make it possible to generate a lot more electricity and in the future reduce the cost of building more coal-fired plants, which makes a certain amount of sense.

Okay, so the idea being, basically, on the whole, we've got to look at the whole of industry and not just this plant or that gas well over there or whatever and say, well, everyone's got to do their bit to cut down, someone's got to kind of get together and organize things and say, why don't you guys over here look at what these guys are dumping into the air or the water or whatever and see if you can do something with it, and, on the whole, we should be able to reduce it a fair bit.

Something that sort of relates to all this -- I don't know if it was mentioned earlier or not. I got here a little late. But the goal of a 20 percent reduction in carbon dioxide by the year 2005 is kind of a global goal that's been set and not entirely accepted by everyone, but it's a number that's being thrown around. As soon as you start throwing around numbers like this, there's always people that will stand up and say, yes, we can do it, and others who come along and say, oh, it's going to cause a lot of grief.

And I would just like to say to the people who are now coming out and saying, you know -- I call it the Armageddon view, well, there's going to be mass unemployment and Alberta's going to lose out on their royalties because no one's going to want to burn our fuel and all this, it kind of comes down to seeing the glass half full -- or half empty instead of half full. A lot of people will, whenever a new restriction or a new law or a new way of playing the game is foreseen, will automatically just go around and say that, well, we like the old way just fine, but the problem is that you can continue to deny a problem and continue to do more studying and more studying, but sooner or later, the ones who get on the horn first are the ones who come out ahead.

And all you have to do is look at the way the Japanese came through the original oil price crisis in the mid-'70s when the Americans put a -- what they call fleet fuel consumption goals on the auto industry, and the Japanese responded to it much quicker than the North American auto industry did with bringing out fuel-efficient cars, and I think that the North American auto industry is still trying to catch up. It's much closer now than it was back then. But it's all again a question of how long do you stand around and say, you know, it's not a priority and watch the other guy get ahead.

And so, on that end, I would like to see Alberta view itself a little bit more not as a producer of fossil fuels but a producer of energy, and if there's going to be new forms of energy, new ways of producing energy or just increases in the efficient use of energy, Alberta should be, instead of standing around and wringing our hands and saying, well, gee, we're in a tough spot because we're the ones selling all these crude resources, we should be out there trying to get ahead of everyone in figuring out how we're going to get around it, and therefore when our sales start to go down in say fossil fuels and we start to have to pinch our own industry a little bit, we'll have the results here in Alberta and the investment can be made here, and it will help alleviate the crunch of reduced royalties to the Province.

And that's about all I have to say on that.

MODERATOR MILLARD: Thank you very much.

Hans Weissenborn?

HANS WEISSENBORN: Good evening, Mr. Moderator, or may I call you Vern?

MODERATOR MILLARD: You certainly may.

HANS WEISSENBORN: Good evening, ladies and gentlemen. My name is Hans Weissenborn. I live in Sherwood Park, and I am here representing the Consumers' Association of Canada.

I learned from your earlier remarks that there was a stage 1 to this where certain stakeholder groups had some input. I guess we weren't aware of that. However, as a consumers' association, we are not really a stakeholder group. We are not environmentalists in the strict sense. We are also not producers. So I think I can fairly say that the Consumers' Association really presents and represents a large number of people of Alberta.

In fact, the Consumers' Association of Canada has about 130,000 members in Canada and about 15,000 in Alberta. As a matter of fact, if you subscribe to one of the Canadian consumer magazines, you are automatically a member. Some people don't even know that. We also figure that, for each subscription, this little booklet is being read by at least three or four people, so our audience is much greater than the 15,000 in Alberta.

We also have a product information line that is open to all consumers, and we do get calls and we do get, in the -- well, in the recent past, we get more and more calls about environmental matters. And, as a matter of fact, I picked up this consumer magazine, because it says "Going Green", which, of course, we are interested in environmental matters.

I live in Sherwood Park. And if I may contradict you a little bit, Vern, you said smog is not really a problem in Alberta. But some mornings when I drive in to Edmonton, I can see some yellow-brownish haze hanging over the city, and I think in California they would call that smog. We don't call it this way, because we don't want to admit that we have it.

Might I also add that, for some of you have read the environmental section in the -- one of the recent Maclean's magazines, I'm originally from Bitterfeld in what used to be East Germany, which apparently is the worst-polluted place in the world.

And their pollution doesn't necessarily all come from energy-related emissions. But those people over there didn't want to admit to themselves that they really had a big problem. They do now. Perhaps we don't want to admit to ourselves that we are getting into a problem. Perhaps, yes, we are a long distance away from Bitterfeld, but we are getting there.

In any case, every time I drive down there, and you just have to drive down when it's a calm day and it has to be fairly reasonably early in the morning, but the sun has to be out, and you can see that smog, just about every morning that there isn't a great -- or there isn't a reasonably strong wind blowing. The trouble is, when there is a wind blowing, it usually comes from the west. So where does that stuff end up? In Sherwood Park and the rest of the countryside. So I don't know if I am too happy about it, and I think the Clean Air Strategy for Alberta is certainly needed.

Coming back to the Canadian Consumers' Association, our role, our purpose, is to make -- to provide information to consumers that is beneficial in making purchases. But that's not limited to the quality and cost of consumer goods, but C.A.C. considers the environmental harm or benefit of an item as an important consideration for consumers. C.A.C.

also endeavours to provide input whenever consumer-related decisions are made. I guess that may be one of the reasons that I'm here.

The C.A.C. does not have an official policy on air pollution. Maybe air is not considered to be a consumers' item. However, we all consume energy to heat our homes, to drive our cars, and we therefore contribute to the greenhouse effect and other pollutants. We also buy products that consume energy, such as cars, furnaces, appliances, and by choosing our purchases carefully, we can perhaps buy a more fuel efficient car or fuel efficient furnace or electrically more efficient appliances. In addition to that, some of the items that consume energy do not only produce greenhouse gases, they produce other air pollutants in the process.

One other area, one other form of energy that tends to be neglected is the use of electricity. In our home, electricity seems to be so very clean. We don't realize, we don't see immediately, that almost 90 percent of our electricity in Alberta comes from coal-fired plants, as the previous speaker pointed out, or generates twice as much -- or more than twice as much carbon dioxide per unit of heat than say natural gas.

In addition to that, because

electricity has to be transmitted over long distances, only about a third of the initial energy is usable at the home. Now, obviously, if consumers had all this information, perhaps we could make wiser decisions as to how to buy our energy-consuming appliances and how to use energy.

At C.A.C., we endorse the steps to increase energy efficiency, the steps that are listed in the new fact sheet under "Residential" in the fact sheet on Energy Efficiency. And the C.A.C. has in the past and will continue to give advice about such measures to consumers.

We also strongly endorse the four "R"s, reduce, reuse, recycle and recover. And, by the way, some people have spoke about the fourth "R", the recover, which simply means that, if you can't reduce or reuse or recycle, then perhaps you can at least recover the energy by efficiently perhaps building that particular item. However, that is the least desirable of the "R"s.

And recycling, particularly in Edmonton, for specific reasons, recycling seems to be such a buzz word these days. It would be much better to start reducing, and particularly in terms of energy we use, is what we should be doing.

Now, conscientious consumers

don't mind paying the extra price for emission control equipment on a car and keeping it in good condition, but not everybody is that committed and there are many cars and trucks around that no longer meet emission standards.

The question is how to enforce these standards. Should we have a yearly inspection or random testing or should we leave things as they are? Many states and some provinces have annual vehicle safety inspections that include emission checks. Should motorists be forced to pay for such inspection? Should it be included in the licence fee, or should it be taken out of our general revenue, which would mean that even non-motorists would have to pay for such tests? Those are questions that the C.A.C. does not really have a policy on, but it would be questions that we have to look at.

And private cars are not the only polluters on the road. Trucks and other commercial vehicles are often the greatest offenders. I recently spoke to a visitor from Germany, and he was amazed that some of our diesel trucks can belch black clouds of smoke into the air without being pulled over and being told that he has to report with his equipment properly adjusted. But I guess we don't do that here.

Well, even the best emission

controls will not prevent all air pollution. We all know that we should reduce the amount of driving we do, car pooling and public transportation. Public transportation in Alberta, while it is getting better, is still a long way from where it is in other industrialized countries. And again we have to face a question, are we prepared to subsidize public transportation in order to reduce the use of energy?

If the answer is yes, where should the money come from? Should we pay more taxes on gasoline? After all, we already pay 17 cents of every -- 17 cents of every gasoline dollar on tax, and that is before GST. Let me tell you, in most European country, gasoline tax is more in the order of 50 percent.

Even if we decide to drive, we can still reduce fuel consumption. A few weeks ago, I brought back some of the recyclable materials, and in Sherwood Park, we don't have a blue box program, so we have to bring it down to a recycling depot. I observed one lady who had a trunkful of materials, and she very carefully sorted it out into the containers for glass and paper and metal, and it took her several minutes. So, obviously, she was a very conscientious consumer.

The trouble was, all the time along, her car was idling. Did she not know that an idling engine first of all has an efficiency of zero, because you're not going anywhere? It also wasn't cold, because it was a few weeks ago. It could have been today; it was cold today. Also, perhaps information should be made available to tell people that an idling engine emits much more pollutants than an engine that is driving or running a car at proper speed. So, again, information and education is necessary, and I guess that was said by the Moderator earlier. I noticed that there was a big item that education is necessary.

So there are many more questions to be answered and much work and education to be done. The C.A.C. has many volunteers with a key interest in environmental matters. This interest is at the same time tempered by realistic views of the cost and achievability, because we do not have only the environment as our only goal, we also want to be sure that we don't have to pay too much for things that are beneficial to the environment. We would like to get more involved in the development of a Clean Air Strategy for Alberta. The Consumers' Association is particularly well prepared in providing information for consumers, and we would like to play an increased role in this area if we can somehow be contacted, and we have quite a number of volunteers available.

Now, I would like to add a little

personal concern to the present proposal, and that is not necessarily the C.A.C. stand. I don't know what the stand of the C.A.C. is on this. In one of the letters that I received as an invitation, it was stated that there will be future opportunities to deal with other air quality issues. However, I also agree with the statement on the back of each of the blue fact sheets that says that the greenhouse effect, acid depositions and smog cannot be addressed in isolation.

It is difficult to separate pollution sources into energy-related and non-energy-related items. Is the burning of wood in a wood stove an energy-related item? There is also a danger that we get so involved in our -- in the present issues that we may forget about the other sources of air pollution, such as the burning of wood as heating fuel or in slash-and-burn land clearing and the burning of garbage in some rural areas, as well as industrial-chemical processes, including pulp mill emissions.

The fact sheet on methane gas lists biomass burning as a source of methane ahead of gas drilling, vending and transporting. So, obviously, slash burning, which is biomass burning, creates more methane. It also destroys some living forests, and living forests help in reducing carbon dioxide in the air.

And I just heard this morning on the CBC that, around the world, it takes about two acres of healthy forest to eliminate the -- per person, two acres per person, to eliminate the carbon dioxide that each person in the world generates. Now, obviously, we are already falling short, because carbon dioxide is increasing in the atmosphere, but we seem to be going ahead, not just in Brazil but also in Alberta, to cut down our forests more and more.

Another one is burning of garbage in some rural areas. And when we burn garbage, in particular in rural areas, we do not have any toxic round-up or toxic deposit depots, and I'm afraid that, particularly in rural areas, some house hazardous chemicals and some farm hazardous chemicals will end up in the garbage, and then, in some areas, that garbage will be burned, and I'm not sure what kinds of toxins come out of this burning garbage.

When we go back to burning wood, when wood is burned at a slow process, at low heat -- and that's usually the case in slash burning, but it's also the case in an airtight wood stove -- we don't only produce carbon dioxide and methane, but we also produce such things as dioxins and benzopyrenes. Benzopyrenes, by the way, are the major cancer-causing toxins in cigarette smoke, except that, in wood smoke, they are many times greater in concentration. And, of course, it gets worse if we thought of some things as colored paper or treated wood in our wood stove.

It is also well documented that uncontrolled emissions from many chemical factories and mills are not only foul-smelling but present a real long-term health hazard. And, as I said, the emissions that came out of a place called Bitterfeld in East Germany are not necessarily energy-related, they are mostly from chemical factories.

But it has other consequences. A while ago, I talked to a tourist who was on his way to Jasper, and he said he got a little too tired to drive on so he thought he might stop at Hinton. He got out of his car, took one whiff of the air, decided that he really wasn't tired enough, he would drive on to Jasper.

To summarize, my -- and, as I say, this is my personal concern -- to consider a Clean Air Strategy without including all possible pollution sources is analogous to creating a non-smoking area where cigarette smoking is prohibited but cigars and pipes are allowed. Thank you.

MODERATOR MILLARD: Thank you. Tooker -- oh, no. Lorraine Vetsch and Mitch Pronaugh?

LORRAINE VETSCH: Mitch Pronaugh will be submitting on behalf of the Friends of the North.

This will be a slight shift from the specific outlined purpose of CASA, but he will be addressing the volatilization of organic compounds from solutions and water.

MITCH PRONAUGH: Okay. I didn't realize that the format was just the way it was tonight, so I am going to try to keep it less formal than I thought it was, and if you will help me with that, I appreciate that.

For several years -- this is on the subject of volatilization rates of chlorinated organic compounds from treated effluent treatment systems of pulp mills. However, it relates equally, or roughly equal, to volatilization of organic compounds from other similar sources such as municipal sewage treatment systems and oil sands plants, and other things.

For several years pollution concerns regarding bleached kraft pulp mills have focused on the discharge of chlorinated organic compounds, AOX for short, resulting from the use of chlorine and chlorine compounds as bleaching agents. Industry responses to the problem of AOX included the use of better digesters and oxygen delignification to reduce the liglin content of the pulp before it reaches the bleach plant, increased substitution of chlorine dioxide for molecular chlorine, and adoption of activated sludge effluent treatment systems capable of removing 40 to 45 percent of the AOX from the effluent. This paper concerns the AOX which disappears on its way through the effluent treatment system. By estimating rates of volatilization from the various components of the activated sludge system, it can be shown that volatilization may be the dominant AOX removal mechanism in many cases.

The background on this is that biological treatment of pulp mill effluent was originally undertaken to reduce its biological oxygen demand by microbial action, and for this it has been effective. Coincidentally the same systems are found to remove 30 percent or more of the AOX from the effluent. Although it was initially thought that the bulk of this reduction was due to microbial activity, recent studies of bleached kraft pulp mill activated sludge effluent treatment systems have found that only 1 1/2 to 3 1/2 percent of total AOX is found in the sludge. This shows the fraction of AOX associated with settleable particles due to sorption or metabolism is very low, and the great majority of removed AOX must be accounted for some other way. It's not difficult to find statements in the literature to the effect that most of the removed AOX must be dehalogenated by microbes in the aeration basin.

Since firm evidence is lacking, these statements seem to be based on the assumption that the removal is caused by the microbes: in the absence of other possible microbial pathways, dehalogenation is presumed to be the explanation by process of elimination.

Another mechanism for AOX removal is volatilization from the effluent treatment system. That volatilization plays a role in the AOX removal is a matter of general agreement, but it is often incorrectly assumed that its importance will be limited to a few chemical species, such as chloroform, which have relatively high vapour pressures. Published reports of field measurements of AOX volatilization from bleached kraft mill effluent treatment systems appear to be entirely lacking; until recently, until 1989, even suitable procedures for measurement were not to be found in the literature.

Now I want to break off there. I just thought I would read the introductory part of my paper. I hope not to confuse anybody, and if so, I am going to try and unconfuse people.

What I am talking about is the organic compounds, and particularly chlorinated organic compounds in the pulp mill effluent, and it doesn't have to be pulp mill effluent, but we developed this looking at bleached kraft pulp mills, for reasons of timeliness.

Well, let's see. Maybe we could put this on here. How did you do that? You got it right side up the first time.

LORRAINE VETSCH: It's a miracle.

MITCH PRONAUGH: I know.

MODERATOR MILLARD: Do you want me to turn the lights down a little bit?

MITCH PRONAUGH: Oh, I don't think that's necessary. I think we can read it okay.

The volatilization rates from water do not depend only on the vapour pressures of the substance in question, but equally on the solubility in water, and in many cases with organic compounds, the solubility in water and vapour pressure are inverse relations. So what this graph shows is this is solubility in water increasing as you go from left to right, this is vapour pressure increasing as you go from down to up. These are various organic chemicals, various organic compounds, where they fall with regards to their solubility and their vapour pressure.

Now the lines that go at an angle this way are the, these lines connect points of the same value for what's called Henry's law constant, and it's the Henry's law constant which determines the equilibrium which these compounds try to establish between what's in the air above and what's in the water below, and as you can see, most of these organic compounds are concentrated in this area here, and this value of Henry's law constant in this range, the volatility is quite high. You can expect high rates of volatilization from whatever is in solution there.

Now I won't go into the mathematics of the thing, but this is talking about, in an equilibrium situation this is talking about, if you have a jar and you put some water in it and it has something in a solution like that, and we will assume it has something in the solution, it no doubt does, and we put a lid on it like this, this is called a headspace. Now the headspace vapours just means how much of the stuff in solution, particular compounding solution, will be found in the air above it, and this, the ratio of how much is in the air to how much is in the water when it reaches an equilibrium, it's not getting more and it's not getting less now, that ratio is the Henry's law constant.

What I found, in talking with a number of people and reading published studies on the subject, I found that people tend to say, well, because the vapour pressure of the great majority of the AOX species, chemical species found on the equal line, because the vapour pressure is much higher than that of water they just won't, you will have hardly any volatilization, and that's a misreading of the problem. That's looking at it as a question of how much vapours would be in the air over the pure substance, not over what seems to be -- not over an aqueous solution.

Well what happens when we -- and the work on this, I was very surprised, the work on this has all been done in less than the last 20 years apparently, and quite a bit has been even done in Canada, in Ontario.

So when we apply this proper understanding of the problem, to make a long story short, we find that in the case of modern pulp mills like Al-Pac expansion, or a number of others, that the proper understanding of the problem and the attendant appropriate mathematics predict that the amount volatilized will be about the same as the amount which turns out to be removed by the effluent treatment system, and there is no need for these microbes to eat these nasty things, they can just stick to this stuff that's not chlorinated.

Also, quite a lot of unchlorinated organic compounds are found to be coming into the air from the effluent systems as well, but we haven't really looked at that yet.

The same thing will apply to, as I said, municipal sewage treatment systems, and I am sure it will also apply to oil sands projects, but I don't know enough about that at this time to make any sort of quantitative statement, but I do want to stress that we have, I think, an unfortunate tendency to think in terms of this is air and this is water, and like there is some sort of a steel wall in between. Well, there is not, and things are constantly moving between the air and the water. In fact, things are moving all over the world between the air and the water and it's becoming pretty well established now that there is a tendency for some very unpleasant chemicals, pesticides and other organic toxic products, there is a tendency for these things to move from north to south, from south to north or from north to south, anyway from warm regions to cold regions because they will volatilize much more happen rapidly from warm waters and be deposited preferentially in cold waters.

So what we get in Canada now, and of course I suppose you don't know, but there have been the findings of toxaphene in remote lakes in the Canadian North which there is no other explanation, apparently, than air transport from remote sources. So what is happening is we are going to get more and more of these various toxic products in our waters in Canada as long as they are used in warmer parts of the world.

Now I think that one thing that

we should do is wake up to the problem early, and set an example at the same time that we start asking other people to stop doing this, because if we say "hey, you people are putting too much poison in the water and it volatilizes and it's air transported and ends up in Canada and we want you to quit doing that, but meanwhile we are going to build more pulp mills, we are going to build more of this and more of that and raise the allowable of this and that chemical effluent, and so on, and not really enforce the law, and give out various orders like that", if we do that, well nobody is going to look at us as anything but a joke. So I think that this is an area that has not been looked at. For instance, well, it's not been looked at as it should be.

For instance the operating permit -- operating permit, I think so -- for Daishowa lists, very carefully, a number of sources from which they can -- from which air pollutants can be emitted, and in particular they are thinking of sulphur compounds, but they don't list the effluent treatment system when, in fact, that's one thing that is documented now, is that there is quite a lot of H2/S and reduced sulphur compounds coming off of the effluent treatment system into the air. So this is not thought of and not considered as a source of air pollution, and it definitely should be, it very definitely should be.

Meanwhile, you have people in the Northwest Territories that are very upset, because whatever we put out is going to be headed their way, their being in a colder part of the world.

Let's see. I don't think we need that. I hope that, I would like people to ask me questions, because I am sure that some people don't understand a lot of the things that I have been saying, and I very much hope that people will ask me questions on it.

MODERATOR MILLARD: I think maybe we should hold that off to the end, I am not sure if we have enough time, but perhaps if there are they can talk to you after the session and clear up any areas.

MITCH PRONAUGH: Anybody who would like a copy of the paper here on the volatilization from effluent treatment systems of bleached kraft mills, please talk to Lorraine, she is better at not losing notes and stuff, and we will for sure get it to you.

Now another thing that I think we should perhaps mention is the interconnectedness of several different sources of air pollution. I think I am -- do I have it here?

This is a map of what used to be called Alberta. You can see the different principalities lined out in different colors as they are being assigned to various dukes and earls from Japan and other foreign countries. The thing I want to, I want to get this on right, this is a little bit tricky for me to line up, I think I can line it up. And there is a reason I am doing this.

This green part is just to shadow everything but the area that's not shadowed there which is, according to the E.R.C.B., the extent of the heavy oil deposits of Alberta. This is both the carbonate series and the sandstone reservoir rock series of the bitumen deposits of Alberta, and as you can see most of it underlies these various forest management areas, particularly Daishowa and Al-Pac, and the reason I am bringing this up as a concern with the air pollution is that, with the development of any future oil sands projects, there will be air pollution attendant in the area, and whether it's acceptable or not from a standpoint of people that live there, from the standpoint of the national interest and so on, that's a question that we should decide and deal with.

However, there is another question, and that is the effect that it will have as perceived by Daishowa and Mitsubishi/Al-Pac in particular, because according to their, well according to the Daishowa Forest Management Agreement, and we must assume according to any future Al-Pac Forest Management

Agreement, the trees in these areas are their property and any, according to the FMA's, according to the agreement signed with Daishowa already in place, any damage to the trees, anything that causes a reduction in growth rate of the trees, a reduction in growth rate, the FMA holder, either Daishowa or Mitsubishi, will be able to sue the person or company who's the source or who has caused the pollution which is causing the reduction in growth rates. So this is, this will be, I think, a very daunting thing if you -- if anybody is thinking about developing a tar sands plant in the area or continuing to operate one that's already there, and the volatilization from ponds associated with these oil sands projects will be part of that problem.

I like this because it is colourful, and I hope that you do too. Thanks.

LORRAINE VETSCH: I just wanted to mention another couple of items on behalf of Edmonton Friends of the North, and that the value of the forest as natural scrubbers has not been studied completely or in a scientific matter, and so mass deforestation is going to be a problem if we don't understand the role of the natural forest.

We obviously feel that the pulp mill push in Alberta has to factor strongly into CASA's strategy for reasons that Mitch pointed out, and that the pulp and paper industry must be very closely monitored, as is some other big industries in this province. They are not monitored closely or carefully enough for things going into the air, the air emissions.

And the FMA holders, if they are not held accountable for their air emissions, and that's Forest Management Agreement holders are not held accountable for their air emissions and the trees on their Forest Management Agreement do get sick, it's worth pointing out again, as Mitch did, that they could possibly seek damages from other industries in the area, and so this is an important issue for the Clean Air Strategy for Alberta. Thanks.

MITCH PRONAUGH: I am really glad you mentioned about the trees scrubbing, because the work that has been done, in particular the ADRP here in Alberta with its modeling of sulphur deposition in the province, has not taken any account of forests on sulphur deposition rates or on air pollution rates, and specifically avoided that subject and said so, and so the application of this to Northern Alberta is pretty questionable.

When you remove a section of forest, the result is that you will have higher levels of air pollutants, because the forests are not, the trees are not absorbing and scrubbing the stuff out of the air, so you will have higher levels of air pollution. You will also have higher levels of sulphur deposition in the forests, because those trees have to soak up more stuff, and you will also have more, a higher level of deposition in the areas which are not forested because there is less forest to take it up.

It sounds like a paradox, but it's not when you just set up the equation here. It's very simple.

MODERATOR MILLARD: Thank you. Tim Nolt?

TIM NOLT: I would like to thank Clean Air Strategy for Alberta for giving me the opportunity to give this presentation. This is much more informal than I thought it would be, I thought I would be speaking to a panel itself.

However, what I have to talk about tonight, I would like to focus on a couple things in particular. I want to talk about the greenhouse effect, and as we know, the current models that are being run by various institutes predict the warming effect of anywhere from .06 degrees to .8 degrees Centigrade per decade, and we only have about 3 or 4 degrees to play around with before it gets really dicey. Those are at current projection rates.

However, there is a lot of dispute to date about the greenhouse effect. Some models feel that if things actually get colder, we will have a mini ice age. Most, in general however, go with warming effect, and what seems to be most indicative about this is first off, climatology is a science of probability and a science of predictability, as any 20th-Century quantum science is. Newtonian mechanics is not applicable in these matters at all.

The Bedard Institute seems to have run the most successful models, and a feature in the running of their models was that they backtracked and they started running their models from the 1950's on and plugging into their calculations formulas to see what kind of correlation you could get in patterns and past histories to line it up, and they seem to be the most indicative of what's going on.

The models that they run, they started out running two hot summers on a die, so that would be roughly eight sides, and by the year 2030 they were getting, in their model, running three or four faces on the die. So it seems that things are heating up, and rather rapidly.

The worst-case scenarios by other people say that we have to cut our carbon dioxide emissions by 50 percent in 40 years. Now what I would like to do, now that I have mentioned those factors, is I would like to stop a moment and talk a bit about the second law of thermodynamics for a while, because to me it's rather important.

The second law of thermodynamics, I won't get into any of the esoteric stuff, it's quite simple; things go from an organized state to a disorganized state, and that's what the second law of thermodynamics is about. So when we put it in the context of greenhouse effect or ecology or the environment, it's simply a question of how much can we pump into a biosphere before that biosphere breaks down, before its condition deteriorates or before it gets dangerous. Okay.

A better understanding of this may be that quantum physics, which is really today's language of nature, it is calculated by some people that, not being religious here but this is to make a point to get the understanding of what I am getting at about entropy in the second law of thermodynamics, is that every time we take a breath of air, theoretically we should be inhaling a molecule of air that Jesus Christ should have, at one time in his life, breathed. Okay? That's 2,000 years ago, and that's just one person breathing air.

What happens every time you turn the ignition on in a car? What does it mean in long-term consequences for future generations of such men? And that's why I wanted to point that out.

Einstein's God didn't play dice with the universe, and I don't see how we can play dice with the world.

So as far as the greenhouse effect goes, I would just like to concentrate in one area right now, and that's cars and light trucks, so I am not talking about the transportation industry itself, we are pretty well looking at what would generally be private-use vehicles.

Cars and light trucks, estimated by some people, produce 18 percent of the global carbon dioxide emissions. They are also the largest-growing source of CO/2. Currently there is 400 million cars and light trucks, as compared to in 1950 there was only 50 million, and at the very seem time we are building 13 million more every single year. That's one year. In two years we produce more than there was in 1950, period. Okay?

Now as well, this is an American figure, in most urban areas 40 to 60 percent of the pollution, air pollution, is coming from cars and light trucks. It is technically feasible to get double the gas mileage out of vehicles by the year 2000, but the problem is how many more vehicles will we have on the road, and how much more carbon dioxide will we be putting into the air. To me it seems obvious that a lot of the solutions, we do have to work on technical aspects, but we really have to start looking at alternative sources to these problems.

As well cars affect, we are talking about the pollution here, we are not talking about the pollution to the troposphere that's being calculated, we are not talking about the pollution that's created to manufacture those cars, there are sub-industries that are related to the cars in products and service, we are not talking about the use of arable land. Again, I am using an American statistic because I didn't find one available for Canadian purposes, but in the United States for every square mile of land they have a mile of road, okay, and the car also uses up land, air, and water all interconnected, and whenever we are talking about a strategy for clean air, we are also talking about various other aspects.

As well, to get back to the transportation sector, a statistic from the States again, in roughly 1962 or '72, excuse me, they calculated that some 30 percent of all carbon dioxide came from transportation, and we are not mentioning the non-renewable resources that are being used for cars and light trucks, what would be vans and light trucks.

Therefore my suggestion is -- and I am going to mention a three-letter friend-getter -- in the days when we are having slap-happy tax laws passed I really think that we have to incorporate proper taxes, and there are options that are available.

We can have a gas pump tax, a tax at the gas pump, and I don't care how much you want to go out and educate people with driving their cars and talking nice to them to try and use public transit and that, they won't unless you get them in the pocket book. That's the reality of it, I think.

The other thing is a lot of people don't want to do it because we do not have the sufficient infrastructure now, and when we start talking about having infrastructure for public transit we run into two big problems; one is time; and one is money.

The time factor is very important. We have to start working on these things. If you believe in the second law of thermodynamics like I do you, you realize there is no tomorrow, there is no waiting around to see what happens. So to build this infrastructure, if, according to the proposed legislation for environment, the enhancement of the environment goes, we look and take seriously the user-pays concept in it, we would have to have a pump tax, possibly a vehicle tax, and something else that's come out of England which I think would be -- this relates in general to everything -- is a concept of a carbon tax. Okay? And in that carbon tax it's a prorated tax on CO/2 emissions. Therefore, a fuel like coal would be taxed much more heavily than a fuel like natural gas. Okay?

The other point I would like to make about the idea of having a gas pump tax is that I would rather prefer to see the Provincial Government handle it than the Federal Government, because the big problem is that the Federal Government handles it, it just goes into one big pot and it will probably get lost and mixed up, messed around with, and not be used efficiently. To build an infrastructure, that's a local problem that has to be solved by local authorities, local governments, local peoples, so if the Provincial Government were to handle it I also think people would be willing to accept this tax if it were earmarked legislation; in other words, that tax money is destinated specifically for building transportation infrastructure, nothing else, especially, as I said before, this slap-happy tax stuff going on now, antiquated 1960's stuff.

But anyways, earmarked legislation, I think, is important for one, people to trust it; for two, to actually get the work done so it doesn't get mixed up in the big pot.

So therefore the infrastructure would bring in different gas taxes or energy taxes, would have to work on public transit, meaning buses, light rail, and the other thing is bicycles and bike trails. The bicycle is literally the world's most efficient machine. That means that it's the least entropic. That means that it gets more workload done per calorie expended than any other ground machine that mankind has ever devised. So bicycles are no longer a toy, they are part of a quantum reality, okay, and we have to take these things seriously and we have to start building bikeways and looking at bikes a lot more -- less as toys and more as actual machines.

As far as, again, the infrastructure goes, we are probably going to have to look at building better railway systems into the rural area, and that creates a bit of a problem because then we are getting away from the local nature of things as I suggested, but then again I think that's why provincial governments should handle it, not federal governments.

It's also interesting because Jake Epp, just last week, said that the Federal Government is going to make petroleum very expensive for the sake of creating less carbon dioxide emissions. I don't see why it should go into federal coffers and why it shouldn't be given out to local people to create the proper infrastructures to make it effective.

And one other point here, while

we are talking about the greenhouse effect, we were talking about, the gentleman before was talking about the scrubbing nature of trees. What we have to consider is that trees are literally a carbon sink. The two greatest carbon sinks known are the ocean and trees.

The problem with the ocean is nobody quite yet knows what's really going on with them, how effective they are and what's they really do, but they are quite certain about what trees do, and some estimates claim that we would have to over the next, to help cut down the carbon dioxide emissions over the next 40 years, that we would have to plant -- this, we are speaking locally here now -- as many trees as there is the size of Alaska. Okay? So we are talking global terms here, then we are talking about pulp mills and knocking down those trees.

Of course one of the arguments from the people from the pulp industry is that a new tree absorbs more carbon than an old tree, but except when you are using that argument they are talking volume-to-mass ratios, and don't forget a new tree is this big. Okay? So there is a big, big problem there.

If you have to plant these trees, then we are not talking about reforestation, we are talking -- we are totally -- we are misperceiving everything if we are talking about reforestation, knocking them down and planting them again, we are talking about what we need over and above what's existing right now.

So therefore, reforestation is the wrong word, the word is afforestation, and once we focus in on afforestation that means that we have to change our whole focus about trees and tree planting, and to be honest instead of having a -- and I am not being critical of the government, this is a personal view -- but rather than creating a family day, I thought we should have created another tree-planting day, quite seriously, and had people go out and plant trees, because it is actually that important.

The other thing that I would like to comment on is everything is interrelated, land, air, water, energy, ecology, Department of Agriculture, Department of Forestry. They are not separate units any more when it comes to environmental issues.

So to backtrack, to get back to the pulp mills, I would think that these four departments actually have a lot of commonality now with environmental issues, and I think that maybe one of the problems with the pulp mills again is that we should refocus and we should ask ourselves, is there another source of pulp?

We have farmers who have silos

full of grain, they can't get enough money to pay their bills. Could we not possibly find another cash crop so that instead of cutting down the trees, they could grow a cash crop that creates pulp, and pulp can also be useful in clothing and other things, so that's another suggestion that I would like to make.

That pretty well wraps it up, if I have got everything included. Again, I thank the Clean Air Strategy for Alberta for this time. Thank you.

MODERATOR MILLARD: George Marshall?

GEORGE MARSHALL: Thank you. This evening I am representing the Canadian Chemical Producers' Association, the CCPA.

The CCPA has previously submitted its comments in written form for the review of the panel. It's my pleasure to be here this evening to further support the objectives of a Clean Air Strategy for Alberta. I am not going to read from the previous submission, but rather I will attempt to summarize a few of the points that were made and to give some detail, by way of example, to address global warming, ozone depletion, and air quality.

The CCPA represents over 70 member companies producing a broad range of petrochemicals, inorganic chemicals, and petrochemicals worth a total of some $11 billion annually. The industry is highly trade oriented, with about half of its production being exported.

Within Alberta, the CCPA represents a dozen member companies with assets of $7 billion, employing directly some 6,000 people with a payroll of $1/4 billion annually. Products manufactured are valued at $4 billion, with 50 percent destined to the export market. Our plant operations are generally world scale, our markets are global and our competition is international.

The CCPA, on behalf of its member companies, accepts the responsibility of acting in an environmentally responsible manner, and is committed to the responsible development, introduction, manufacture, transport, storage, handling, distribution, use and the ultimate disposal of all chemicals and chemical products in a manner which minimizes adverse effect on human health and on the environment.

The CCPA and its members are committed to identifying issues and their solutions in a co-operative partnership with all other interested parties. We have found this to be a most successful and satisfactory approach to solving a variety of concerns.

Globalization has been the order of the day for many industries, and that includes the chemical industry as well. Vigorous competition is being met in both domestic and international marketplaces. What we do within Alberta will impact our competitive position here and the continued viability of the chemical industry. We must continue to be aware that short-term dislocations could result from precipitous action on a local scale, impacting our global competitiveness with potentially long-term negative results.

The challenge, then, is to identify the manner in which Alberta may demonstrate leadership on these critical environmental challenges, and in their solution.

Leadership can be practiced by taking unilateral action and the consequences thereof, or it can be exercised by prodding everyone forward. The former can create serious disruptions, the latter can accomplish the necessary change and a much smoother transition with considerably more impact in the world.

It is therefore recommended that Alberta continue to demonstrate environmental leadership by forming partnerships with affected industries and concerned environmental groups to attain consensus on the issues. The CCPA is committed to play a positive, proactive, and a responsible role within such partnerships.

I would like to make a few specific comments, and the first one relates to the education and information comments that have been made two or three times earlier this evening.

The first part of that is related to better science. We need to recognize that good science may not exist in all areas. We have to work to improve the science, while using what is currently available to our best ability, to manage the uncertainty.

We also need to continue to bring forward more information concerning the environment. Some of the information we have currently is confusing, some of it is contradictory, and there is certainly lots of it. We need to continue to provide it to the public in the best manner possible, and ultimately that too will lead to better science.

The education system needs to make use of that better science, and the increase in information, and provide a balanced approach to the presentation of the data. The CCPA is, in fact, involved in this arena through the KEY Foundation, the Knowledge of Environment for Youth, which was formerly called the SEEDS Foundation.

Partnerships. Optimum merging of environmental and economic objectives for Alberta can only be achieved by early and ongoing consultation with all interested parties towards consensus building. Unilateral decisions by Alberta could severely harm Alberta's economic performance while in fact doing little to impact what is essentially a global problem. We should, instead, attempt to lead, to catalyse a broader initiative.

On global warming, reducing scientific uncertainty that has already been addressed two or three times this evening must be the primary objective. I think this is likely to be achieved yet this year at the World Climate Conference. We should first obtain the deliberations from that conference and know that there is a real problem that does, in fact, need addressing.

Global warming is a global issue requiring global solutions. Alberta cannot significantly change the current circumstance alone.

Within this topic I would like to speak about energy conservation, and that too has been mentioned two or three times. A conservation approach is most likely to have the greatest impact on the CO/2 component of the global warming general problem. CO/2 is produced as a result of energy consumption, therefore it seems most reasonable to reduce that consumption. I would, though, like to suggest a caution that energy conservation is not a new topic to all of us, or indeed to any of us. Any proposed program must take into account the fact, for example, that the CCPA member companies have had, for almost 20 years, a formal energy reduction program known by an acronym called CITFEC, the Chemical Industry Task Force on Energy Conservation.

Through this program, our industry has documented a reduction of 41 percent in the amount of energy required to produce the final product. That's not to suggest that we are using less energy in total, we are in fact a fast-growing component of Alberta and Canadian manufacturers, but that we are almost twice as efficient as we were 20 years ago in making the same products.

That's the overall average within the chemical and fertilizer industry. In the case of our own company and our Western Canada Division, that energy reduction number is not 41 percent, but 57 percent. The advantage that we have, of course, is the Alberta industry is much newer and we have new plant operations.

I would suggest caution in any program that is developed that we do not penalize those industries that have had effective programs for years.

I have a second example you may be interested in, and again I will use my own company, and I will refer you to the recently approved Hydrocarbons Project at Fort Saskatchewan. There will now be three major ethylene plants located in Alberta; AGEC 1 and 2 in Red Deer, and the Light Hydrocarbons plant in Fort Saskatchewan. The process design in all three cases was done by Dow Chemical. When AGEC 1 was designed and built, it represented the state of the art technology in terms of energy consumption. AGEC 2, which was designed only five years later, used 20 percent less energy than AGEC 1, and the Light Hydrocarbons plant, whose process design package is just now being completed, will use again another 20 percent less energy than AGEC 2.

What this means is that in the last ten years, our industry has managed to reduce the energy input per unit of ethylene produced by 40 percent, and since the CO/2 produced is directly proportionate to the energy consumed, the CO/2 emitted per unit of ethylene produced has already been reduced by 40 percent.

In reference particularly to electricity production, which in Alberta is done using coal, I suggest there may be two areas of investigation, both of which lead to conservation of our resources and therefore less production of CO/2 and reduced accumulations leading to global warming.

The first is cogeneration capability. Current practice within our major utilities leads to a 35 percent efficiency. That was earlier referred to this evening as well. Cogeneration is over 80 percent efficient. We must find a way to use the byproduct heat energy effectively.

The second is coal gasification. The use of coal itself is a problem. We need to identify more effective and efficient ways to use the coal. Gasification may be the answer, and here, Alberta leadership and innovation could reap large benefits in the technology as well as in reduced CO/2 production, and I understand there are already plans for a joint study between the Alberta Government, the Federal Government, and the Coal Association which are under way.

Finally, in any proposed program relating energy use and global warming, you must differentiate between the energy used as fuel and the energy used as feedstock, where the carbon molecule remains bound in the manufactured product and the energy is still inherent in that final product. Feedstocks must be excluded or exempted from rule-making in that case.

Ozone depletion and the impact of CFC's. The relationship between CFC's and ozone depletion does not appear to be established. Action has been agreed upon within the Montreal Protocol, and others, including some new Federal initiatives. Steps will be taken in a planned manner. Yet some would have us believe that more precipitous actions are necessary.

CFC's were developed because they obviously served a specific need at the time, probably because they were either safer or less toxic, more efficient, more effective than earlier alternatives. Now we know there are some unexpected problems, and they will be phased out, but we must do so in a planned and a reasonable manner. We must not move to less-desirable materials with yet other potential problems we are not aware of today. The development of those substitute materials unfortunately simply takes time, time just to build plants that are going to produce the large volumes of substitute materials needed.

While we wait for those new and effective substitutes, there are indeed steps that can be taken. Again, speaking about refrigeration and air conditioning applications that use CFC's for example, you might consider:

such proposals as not allowing the design, purchase, or installation of new equipment using controlled CFC;

and with existing equipment, you might establish an inventory of that equipment, monitoring the equipment for leaks, recovery and recycle procedures during maintenance operations, and procedures for proper disposal of the CFC's when they are no longer needed;

and putting in place long-term capital plans for that equipment replacement. So there is no need to stand still while we wait for the development of new materials.

Draconian measures are not needed. Partnerships in developing solutions, both short term and long term, can and will get the job done.

A final comment on VOC. Information published by Albert Environment suggests that transportation contributes almost half of the total VOC loading, and certain measures have already been proposed to address that challenge.

The petroleum and petrochemical industries contribute a quarter of that loading. Programs are already underway to further analyze and respond to this challenge. Within the petrochemical industry, the first step is to get better data, better science. If we don't correctly identify the problem, we can't fix it. Some data suggests that that part of the problem is much less significant than earlier thought. That is not meant to suggest any lessening of activity. As a matter of fact, within a few years, perhaps as little as two or three, we will expect to have a comprehensive emission measurement and control procedure in place within the industry, and information and methodology and programs concerning that would be shared among the industry.

In closing, our industry intends to contribute to the solution, and not to the problem. Partnerships and consensus on action will achieve the desired objective of a clean air environment. Thank you very much.

HANK HOLLOWAYCHUK: Good evening. Good to see Vern back. I would like to take this opportunity to thank Alberta Environment, Alberta Energy and the panel for giving us time to make a presentation.

You know, environmental problems, they're a lot like big cow pies in the pasture. You think that's amusing. I'll tell you why the similarities exist. Environmental problems are just like cow pies because, if you can't see them, you're not going to take steps to avoid stepping into them, and that's where the similarity lies.

And, having said that, I would have to bring up the issue of cattle and bovine flatulents or whatever Baxter Black calls it, and the reason I do that is I think we can't address a clean air strategy without bringing all the players into the picture, and that means farmers and ranchers. And if I got their attention now, I'll probably get everybody else's attention.

Like I said, you can't single out one industry. We've got to get everybody involved. Consumers are just as much a part of the problem as we are a part of the solution.

I think the energy sector has made significant inroads and strides in dealing with the pollution problems they have been faced in the last decade. The E.R.C.B. and the energy sector have made significant improvements in sulphur recovery, stuff like that, just to give you some examples of -- some of the automobile manufacturers have made significant improvements in fuel efficiency of their vehicles, etcetera. I don't know about you folks, but I had to drive a car to get here. It's an old beater, but that's reality.

Looking at the number of people in this room, I don't really know if this has been a success or if we can really say that we have satisfied the objective of public consultation. I don't know if that's because Brian Mulroney was in town the other day or the recession is here, but, obviously, either we're missing something or missing a lot of people. And I don't think it's because we're not concerned, but somewheres along the line, I think they have fallen by the wayside because of the number and diverse number of issues that have sort of come up in front of the public.

And, mentioning that, I'm not going to give you any details, but I think that what's been said in this room here today has all been said and done before, no earth-shattering revelations. The Bretren Report mentioned some of the problems that this world is facing. The Alberta Government's got a -- or had a proposed action plan for enforcement -- or environmental law enforcement in Alberta. It had an environmental impact review task force. They are proposing a natural resources conservation act. Just not too long ago, Marcel Masse completed an energy options sort of a song-and-dance routine across the country. Later than that, the Federal Green Plan, which was initiated by Lucien Bouchard and followed up by Mr. De Cotret here, or whatever, I can't pronounce his name.

You know, there's been lots and lots of talk over the years, and we know what the problems are, and we know the solutions, and governments know the solutions, every level of government. Industry knows the problems, they know the solutions. But it's like that proverbial cow pie; if you ain't stepping in it, you don't think it's out there and it ain't much of a problem.

So I wonder if we're going to have to get to stages like Mexico City or Los Angeles or the Sudbury/Inco smelter area where thousands of lakes are now dead. Industry's not been -- the energy industries have affected the livelihoods of fishermen, of loggers, of maple syrup harvesters, affected the tourism industry, and I wonder how much worse things are going to have to get in Alberta, in Canada, in the world before there's a political will and a commitment by all levels of government and all people to start acting on some of these major issues that face us.

The reason I say that is I've had the opportunity to work in the Arctic, and I'll admit it's the oil and gas exploration sector of it, but having had that opportunity to work there for the last 20 years, I have noticed something that I never noticed 20 years ago, and that's the Arctic haze, and that is a result of industrial pollution congregating at the North Pole. And it's visible, and it's the same kind of a haze you see flying into Los Angeles, it's the same kind of a haze you see driving into Edmonton from St. Albert or from Smoky Lake, where I come from, so I realize that all this is well-intentioned and I think everybody has that same idea, but I wonder how much further we're going to have to go along the road before we actually start taking more action and quicker action and responding to problems before they get sort of out of our control.

And, mentioning that, you may be aware that Big Green was defeated in California as Initiative 128, I believe, by a margin of 2 to 1. Well, everybody thinks environment's important. And California's probably got some of the best examples of what happens in urbanized -- a highly industrialized area where they import people into areas where there is no water and stuff like that and start building around those areas.

And that brings me to the issue of planning. I think that that's one of the things that we should be looking at when we plan cities, industrial complexes. What we do now is -- the way we site stuff creates large urban centres like Sherwood Park and St. Albert and everywhere else, Gibbons. And what do these people do? They all jump in their car and they commute to and from their job, and not mass-transit, one or two people to a vehicle.

And so we're part of the problem. And I think we're going to get to the stage that they're at in California where they have made some initiatives, you know, fast lanes for buses, fast lanes for more than one person in a car. So that's easy to solve: You put a dummy in your vehicle and away you go, and down the fast lane. And that happens in L.A. every day. That's how they're coping with pollution.

What else do I want to say in summing up here? Like I said, I also have problems with a government that tells us it's doing all these good things. Alberta Environment tells you it monitors the Clean Air Act, they licence and monitor land fills, they administer the Clean Air Act. When you get into the reality of the situation, though they have done a lot of good in a lot of areas, there's one big problem, is that they have problems getting a handle on little things like the land fills the previous gentleman alluded to burning and continuing to burn not only in Alberta but Saskatchewan, Manitoba -- heck, I've seen them burning in Texas. They burn all across the country. Yet the Alberta Government says, we've got Swan Hills waste treatment plant, we've got the best facility, the best regulations. Well, that's fine and dandy, but if we can't get a handle on these little problems, which are very much a serious air quality problem in rural Alberta -- and what's deposited from that smoke and emissions travels into the water courses, into the air we breathe, deposit on land and into the food chain, the food you eat, so we've got to start getting a handle on some of those things.

And I don't think that the

present proposed Environmental Protection Enhancement Act is going to address those issues, and they're related to air quality in Alberta. It's still a toss-up between, well, we're Alberta Environment, we do this and that and we licence and monitor, but if it's a land fill, hmm, Public Health Act, wasteland regulations, the local Board of Health.

And there again I find a big problem with what's happening in this country. The Federal Government shuffles responsibility down to the Provincial Government. The Provincial Government shuffles responsibility down to the local authorities. The local authorities, including boards such as the North East Health Unit, who sits on them? Local town councillors, local county councillors, and they're subject probably in more ways than the federal and provincial politicians to peer pressure from within a community, and that's why nothing gets done, and they don't act on legislation that's in place and is well-intentioned and is already adequate to address a lot of our problems, but the political will isn't there and the infrastructure isn't there.

I'll give you one other example that deals with hospital incinerators in the city of Edmonton. I was driving down 111th Avenue yesterday. Low and behold, I'll tell you, there was a pile of black smoke coming off that Royal Alexandra Hospital incinerator. So being the good corporate citizen that I am, what do I do? Man, I get on the phone, I know there's a toll-free number, Alberta Environment, call anytime, we'll be there anywhere, anytime to deal with the problem.

I did just that. That smoke was being drawn up by the fresh air intake at the Highland Centre. People are exposed to it. I don't know what's going up in that smoke stack. I phoned Alberta Environment, left them with the message, give them the date, the time, location. Went down to Humpty's two blocks away and had breakfast and watched that thing belch smoke, but I'm not worried, Alberta Environment is on the job and they're doing their thing.

Well, I phoned back today and asked them how they made out. Well, it just so happened I guess I phoned around noonhour, and it just so happened that I was the bad guy complaining, and they have heard from me before, and it just so happened that this was the first issue that they couldn't send anybody out to investigate in the last six months. I don't know; if you're confident with that, that's fine, but I have a real problem with them having adequate finances and manpower to do the job they are telling Albertans they are doing. And if that means getting more people into that Alberta Environment portfolio so that they have adequate inspectors, then that's what's going to have to come before you're going to see any improvement in the environment.

And the reason I mentioned those two issues, the land fills and incinerators, is we all know already after the Lodgepole blow-out, if you've got a gas well blowing somewheres and it may not be one one-hundredth as toxic or in any way endangering anybody's health, by golly, after Lodgepole, you've got everybody out there. You've got the A.L. -- well, not the A.L.C.B. but the E.R.C.B -- just wanted to see if you guys were awake out there -- you've got the E.R.C.B. out there, you've got the Public Health inspectors out there, you've got Occupational Health and Safety out there, you've got Alberta Labour out there. Hell, them guys are running all over each other in the field trying to see what's happening out there. You just phone a land fill problem in or an incinerator problem.

There's hospitals that have been built five years ago that were brand new, state of the art, we added technology. No licence, no permit to conduct an incinerator, no licence to operate it, no certificate of compliance until some guy named Vankol Widget (phonetic) phoned this in and said, let's check this out. So if you guys think that Alberta Environment is doing things in your best interests, I say we're sadly being deluded.

I guess I have said enough. I just think that there's a lot of options available, such as recycling, and I think the industry has made some good inroads into those areas, and I know the Petroleum Association is looking at recycling of used motor oil, which is a problem, though it's not maybe directly an air quality problem unless it's burning some land fill illegally.

Just one other thing, a word of caution, I guess, and I guess somebody from industry mentioned it: We've got to be careful so we don't get too carried away, and McDonald's going to paper is a good example of what good-intentioned environmentalists can do to big industry in the name of environmental movements. I think that it's a big mistake and it's a shallow victory for the environmental movement in this province, if they think that they made the right decision by going to paper versus polystyrene. I think if you add everything together, polystyrene is the way that McDonald's should have stayed and it's the way they should have kept on doing their business. They had some 50 or 60 recycling depots set up across their stores.

With the weight factor, the energy requirements that go into each one, even though one is non-renewable, one renewable, just go to Eastern Canada and see what pulp mills do to your river systems, just go to the West Coast and see how many fisheries are shut down because of the pulp mill pollution, just go to certain areas and see how many areas aren't properly reforested, 38 percent in Alberta, that aren't adequately reforested. So a lot of times, we think we score a big victory. Really, we're deceiving ourselves, and we're going to be in for a big surprise down the road.

The other thing I'll add in closing is that I was at a Canadian Professional Biologists symposium in conjunction with the Water Resources Commission. Being a poor old environmentalist, I had to sneak into the damn place, can't afford the $265 fee, and I'll admit to that, but a lady from the Calgary Herald said, well, you know, we're doing our thing for recycling now, we've got a drop-off centre for papers. Hell, that's a good idea. You bet it is. Only like the previous gentleman mentioned: What happens is every do-gooder in the community that wants to do a bit to help environment, and with good reason, jumps in their gas-guzzler with three pounds of newspapers, drives down to the Calgary Herald and stands in line for two hours burning three gallons of gas to drop off five pounds of paper. So, really, there again, unless it's a convenient and effective collection system, a lot of times again, we're deceiving ourself.

That's all I would like to say, I think. I would like to thank everybody for their attention. It's hard to follow up the nine previous speakers, but I hope you have enjoyed the evening as much as I have, and we'll see you again down the road.

Thank you.

MODERATOR MILLARD: Thank you.

Tooker Gomberg?

SUSIE WASHINGTON: He's not here, Vern.

MODERATOR MILLARD: Oh, fine. Well, ladies and gentlemen, that completes the list of people who had indicated that they wanted to make a presentation. Is there anyone else that wishes to do so at this point in time?

I don't see any hands waving, but I don't see very well anyway. Okay, I take it that there aren't.

Well, let me say thank you very much for coming out this evening. I think it's no exaggeration to say this is by far the best session that we've had so far. Personally, I enjoyed all the submissions. I thought they were very reasonable, very helpful, and we appreciate you appearing, we appreciate getting your ideas and look forward to working with you in the future. Thanks very much.

MITCH PRONAUGH: With regard to the question period which you mentioned before --

MODERATOR MILLARD: Oh, yes.

MITCH PRONAUGH: -- I'm sorry that there hasn't been a question period, I'm sorry that the lazy bastards who we have -- had the data on it and who were on this panel aren't here, and I'm sorry that this has not been a part of the -- in its format, at least, part of the ongoing democratization of our society which we've seen with the AL-PAC Review Board and so on.

SUSIE WASHINGTON: Do you have some questions? We can certainly have a discussion.

(Meeting ended at 9:15 p.m., Friday, November 16th, 1990)

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ORIGINAL

CLEAN AIR STRATEGY FOR ALBERTA

Transcript of Proceedings

Regional Meeting

Held at Medicine Hat, Alberta, on
Wednesday, November 28th, 1990

Appearances:

Vern Millard -	Moderator
Kate Hoos - and Cheryl Bradley	Western Environmental and Social Trends
Louella Wood, CSR(A)	Court Reporter

Transcript of Proceedings

(Meeting commenced at 7:10 p.m., Wed., November 28th, 1990)

MODERATOR MILLARD: Good evening, ladies and gentlemen. Let me welcome you to this evening's discussion group for the air quality strategy for Alberta. We are pleased to see that you have come out. I haven't seen the weather outside, but I gather it's a bit of a stormy night, so we really appreciate you coming.

DR. SHEPHARD: There never was a storm around here. We save that for Edmonton.

MODERATOR MILLARD: The program this evening will consist of a few brief introductory comments that I would like to make, and then we'll move on to submissions that people wish to make. And, following that, if there are other submissions that anyone wants to make, we would certainly welcome them, and, after that, perhaps we can have some discussion.

My name is Vern Millard. I've been asked to moderate these meetings, and I've been asked to make some introductory comments in terms of the problems that we're facing today and what the Clean Air Strategy is all about for Alberta. And I might say that these comments that I have put together are drawn from the fact sheets that have been prepared by the Clean Air Strategy group. And those that haven't seen them, I would certainly commend them to you. I personally found them very interesting when I was reading them and very informative.

Now looking at just the overview of the Clean Air Strategy, and, appropriately, we can start with what is the Clean Air Strategy all about? And I think we can recognize that our planet today is threatened by man-made emissions. There is a growing consensus among informed and scientific people that emissions must be reduced if we are going to avoid serious problems with respect to the planet, and the Clean Air Strategy is a means of encouraging public discussion with respect to those matters.

The strategy consists of three main features: Firstly, identifying the important issues; secondly, developing practical approaches for reducing emissions; and then thirdly, recommending policies and programs to the Government that it could implement.

The Clean Air Strategy is based upon a four-stage program. The first stage took place in September of this year when a group of industry, environmental groups, public health groups, research and so on got together to discuss the problems and to identify the key issues and the options. Out of that came a general consensus on the need to reduce emissions and to develop a strategy for Alberta.

The second stage of that program is the regional sessions that are taking place today. We have had sessions in Bonnyville, Fort McMurray, Peace River, Edmonton. We tried to have one in Pincher Creek Monday of this week, but the weather led us to leave. We'll be going back there later in the month, next month. And then Calgary and Red Deer.

The third stage is a summary workshop, at which time the original group will get together and consider the various options and views that have been expressed from the regional meetings.

Then out of that will come an overall strategy, which will lead to the fourth stage, namely, a final report which will be available to the public and will represent the recommendations of the group to the Government.

Now, what are the major problems that we're facing today? As I mentioned before, there is a growing consensus by research scientists that our planet is under serious strain. An example of the kind of studies that are taking place is demonstrated by a convention that was held in Montreal in November of this year where 700 scientists met to talk about global warming and came to the conclusion that we need to do something drastic to reduce the degree of emissions and the degree of global warming.

There are three main kinds of problems that have been identified. The first one is the so-called greenhouse effect or global warming that I was referring to previously. This is caused by carbon dioxide and other emissions to the atmosphere. Gases trap energy radiated from the earth, and fossil fuels and water are the major sources of greenhouse gases. And the emissions occur in both the production of energy resources and in the use of fossil fuels.

This diagram depicts what happens. Some radiation naturally takes place, but with the buildup of the greenhouse gases, increased radiation -- or increased re-direction of the heat rays comes back to the earth and as a result increases the overall temperature of the planet. Fossil fuels, oil, gas and water are the major sources of greenhouse gases. And I can't read the bottom of it. It's important to recognize that emissions occur in both the production of fossil fuels and also in the use of them. Consequently, we're all involved in this area, because we all use fossil fuels.

A second problem area is acid deposition, frequently called acid rain. This is an issue that's had a lot of publicity over the last decade or so. We've all heard about the problems in Eastern

Canada and Eastern United States. It's caused by sulphur oxides and nitrogen oxides being emitted to the atmosphere. There are substantial sulphur oxides emitted from processing fossil fuels. Nitrogen oxides occur from industrial and consumer operations, such as when we operate our motor vehicles.

The third kind of problem is smog. It's not as prevalent in Western Canada, but it's had a good deal of publicity in other areas such as Los Angeles and some parts of Eastern Canada and the United States. And, indeed, in Calgary and Edmonton, you can see the yellow cloud that hangs over the city under certain circumstances.

Well, what is being done about these problems? I've referred previously to the extensive research that is going on in various countries throughout the world. The national and international research studies lead to agreements, and there was a sulphur dioxide agreement that was reached in 1985 in which a group of countries agreed to a 30 percent reduction in SO/2 emissions. There was an agreement reached in 1988 with respect to nitrogen dioxide. And carbon dioxide is currently being considered, although, based upon accounts in the newspaper, I understand that the Canadian Government has agreed to a policy whereby CO/2 emissions for Canada would be limited to the 1990 levels. And, of course, a major factor of what is being done to look at these issues is through research itself.

How does Alberta fit into this overall picture? Well, first of all, we are a major producer of fossil fuels. Looking at our production from a Canadian point of view, we produce 83 percent of the gas produced in Canada, 80 percent of the oil, and 44 percent of the coal. Partly because of that substantial production, Alberta's share of emissions is particularly large and substantially greater than our population share. Sulphur dioxide, we contribute about 15 percent of Canadian total SO/2 emissions. In terms of nitrogen dioxide, it's 23 percent, and carbon dioxide, a similar number, about 22 percent. And, of course, our population share is something like about 10 percent, so we have the highest per capita rate of emissions.

We also have to remember, though, in thinking about these rates that Alberta actually produces fossil fuels for other areas, other parts of Canada and other parts of the world, in particular, the United States. In fact, 75 percent of Alberta's oil and gas is sold outside the province. We also have to recognize that Canada's share of the world's CO/2 emissions is very small, at 2 percent, and this tends to emphasize the problem, because the share of each country is relatively small in terms of the total, and, of course, when you break that relatively small portion down by province, it again makes it that much smaller, and then when you break it down still further by areas within the province or individuals or individual companies, it becomes a very -- almost minuscule.

We have to remember that fossil fuels are a very important industry in the province. In total in 1989, they represented about $15 billion of value of production. 2.4 billion were paid in royalties to the Provincial Government, which represented about 24 percent of the Provincial Government's revenue.

Now, I think it's important to recognize that we are all involved in this issue. It's not one of those situations where we can point the finger at other people. CO/2 emissions are roughly split one-third by the energy industry, one-third by other industry, and one-third by the public, people like you and I that drive our cars, heat our homes, et cetera.

An interesting question that comes out of this whole exercise is what do we mean by "clean air"? I think under normal circumstances, one would mean air that won't cause problems, even though it has some man-made emissions in it, but they won't cause adverse effects on human health, vegetation and materials.

The catch with that definition is that it's short-term. It means the air we breathe today doesn't cause problems today, but it doesn't really deal with the question of the emissions that occur today that have some impact on heating the -- on the greenhouse effect long-term, and the full impact may be two or three or four or more decades into the future. And so one has difficulty in defining "clean air". And, actually, what we have got to do, I think, is to adjust our definition and our thinking in this area so that we include a provision for the long-term effects, such as the greenhouse effect. Thus, even if we assume that Alberta has clean air today under the short-term definition, we still have a problem with respect to the longer term. And what this means is that we must reduce emissions in order to avoid those long-term global impacts.

Naturally, we come to the question of how can we reduce emissions? There appear to be four basic alternatives:

One is to produce less energy. If we stop producing oil or gas or oil sands, we would significantly reduce the emissions to the atmosphere.

We can use less energy, all of us.

Or we can use energy more efficiently so that we still are able to maintain the way we live, that we use the energy that we consume in a more efficient manner, it goes further.

A fourth alternative is to shift to non-polluting energy sources, such as wind, solar, et cetera.

How can we as individuals reduce emissions? And this really comes to the core of these regional sessions. This is the purpose of having the discussions, because we want to get your suggestions and ideas and advice.

In thinking about it, education is obviously a major factor, but then we're still faced with the problem of how do we go about that education.

We have the issue of how do we become convinced individually that we must change our lifestyles in order to reduce emissions into the atmosphere? And that's difficult because the impacts are so remote to each of us because of this long-term impact.

Now, what policies and programs are required for an effective Clean Air Strategy? Again, I repeat that we are interested in your ideas and suggestions. Some possible developments -- and I believe this is just a potential list -- is we can have new and tighter standards on a variety of areas; we can limit total emissions in a particular area; we can provide incentives to develop new technology so that energy, for example, would be used more efficiently or we would use less energy; we can change the current financial incentives that tend to use more energy; we can expand research. And, of course, the list goes on and on. What we have got to do is to develop a set of objectives, develop a strategy that will permit us to achieve the overall goal of reducing emissions.

Now, that, ladies and gentlemen, is just a brief summary of the background, at least as I see it, in terms of this particular issue. What I would like to do is to now turn to the people who wish to make submissions, and then, after we have heard those, then we can open the meeting up for a discussion and comments and see if we can establish some dialogue.

The first submission is from Tom Pekoe? Is Tom present? Would you like to come forward. And perhaps use a microphone, if that's comfortable, or you can use this -- fine.

TOM PEKOE: Firstly, Canada's record and Alberta's record of air quality is dismal. The United States has had since 1969 a meaningful Clear Air Act with national enforcement. The United States now has the Bush amendments to the 1969 Clean Air Act. Air, in my opinion, in common sense logic, seems to say that it is not a provincial matter. What we see in Canada is simply an attempt to confuse the issue by so-called jurisdictional squabbling, which allows the Federal Government to do nothing and the Provincial Governments of course to do nothing.

Somehow, the suggestion or intimation given by these hearings is, to my mind, an insult to one's intellect. It seems to me to denigrate an obvious: Without clean air, clean water, clean soil, there will shortly be no life as we know it remaining on earth. This is not a subject that is really open for argument. It is a fact.

Another fact I would point out to you, because Mr. Millard mentioned the Geneva conference on the greenhouse effect, but he failed to mention that the United States and Canada and Saudi Arabia were instrumental in torpedoing any concrete recommendations to come out of that conference. To me, a government should be leading the people in saving our earth, our lives, not rushing ahead with earth-killing projects, to have the electoral consensus of the people who will eventually force these governments out of office. How much time do we really have?

But in Alberta, this is not the case. More polluters are rushed on stream every day.

Just witness the incinerators that are springing up all over Alberta at this particular time, Swan Hills, the original, Trochu, Beiseker, Vulcan, Onoway, Stettler, Medicine Hat. We're growing really more incinerators on the plains of Alberta than we're growing trees, and all of this is being done ignoring the experience of other countries. In fact, when one considers what is done in Alberta vis-a-vis the rest of the western industrial community, one must ask is the ignorance shown by the Government of Alberta just ignorance or strategized stupidity?

There are really three types of air. One is the air we're breathing in here tonight, which is an indoor air. The other is the air of the workplace or the workshop. And, of course, then the basic air that fuels -- or gives air for us for a home, and that's the outdoor air. The goal for outdoor air should be a zero discharge with a set time limit on when we have reached the zero discharge.

The most primary thing to decide in what to do with our air is to really know what's in it, so Alberta has to have and has to do meaningful air testing at ground level in all areas of our cities and the countryside. To start with, it should purchase some state-of-the-art equipment, such as super-sniffers. The details of these air tests must then be made fully available -- fully available -- to the public on, I would suggest, a toll-free number. Identify the polluters, charge the polluters and convict the polluters, that is, after we learn what's in the air and we draw up standards, stringent standards. But, most of all, clean up the polluters.

Clean air, clean water, clean soil is a right of the people. Use the Heritage Trust Fund for hydrogen research and production. Use the Heritage Trust Fund to pay for the installation of pollution-control equipment in stacks that went up before controls and regulations that are stringent were brought in. You can't grandfather an old stack. But, by the same token, I don't think it's really fair to expect industry to pay for their own cleanup. To some extent, yes, but to the other, these stacks were allowed to go up, so I think Alberta has to bear some of the cost for those stacks to be cleaned up. To expect at the present time, as Alberta does, meaningful reporting data from industry on industrial emissions is naive almost if in point of fact it is not criminal negligence.

Stop the aerial application of herbicides and pesticides, particularly the spraying of pesticides in Provincial parks. Reduce and control the amount of pesticides and herbicides that inundate the countryside every spring and summer and fall. And, at the same time, aim for the abolition of nitrogen-based ammonia fertilizers.

The next air, perhaps one of the most important airs, is indoor air. To show you some of the importance of indoor air, the German Society of Medical Doctors for Occupational Health And Safety considere the most dangerous chemicals that the worker comes in contact with to be the solvents in paints that are of course used in houses.

Unfortunately, the problem with paint is just one of the things that exists in a house that really makes it unsafe for human habitation. Panelling emits formaldehyde. The wallpapers emit formaldehyde. Wood studs and beams have been treated to preserve them and to eventually kill the home occupants. Stippled ceilings are sealed with oil-based paints. Carpeting is made from a form of plastic, and as those carpets age and degenerate, they give off a dust, and as that dust is a plastic, it does not break down in the respiratory system. Asthma now kills nine Canadians per week. Asthma has increased 25 percent in the past ten years. Of course, the carpet and the tile is glued down with toxic glue. Below the carpet with the toxic glue is plywood that has been joined together with toxic glue and, of course, treated with wood preservatives.

And then there is something that the E P.A., the United States Environmental Protection Agency, is now recognizing as a very sad fact and is now classifying electric blankets as a possible carcinogenic, because electric blankets create an electromagnetic field, as does the microwave oven.

And then, of course, outside your house may go a high-voltage power transmission line, and it's now recognized even by I think Health and Welfare Canada that power transmission lines possibly cause childhood leukemia.

And then the last thing is think of the flowers that you buy to brighten your home up, and we buy them and we never think that those flowers are absolutely contaminated, by and large, unless they have been organically grown, with herbicides and pesticides. The net result of that would be -- let's take a person who suffers from asthma; they buy flowers, they put them in their house, breathe the fumes out the flowers and suddenly have an asthma attack. No wonder the medical system is totally overstressed, and what really disturbs me is the lack of initiative provided by the medical care system in these areas. I've already quoted from what the German doctors feel. I never hear quotes from Canadian doctors, never.

Lastly, radon gas. Again, the

U.S. environmental agency says it's a major problem. Sweden considers it a grave problem. Canada says it's no problem. Just as Mr. Beatty (phonetic) three weeks ago said, that there's nothing we can do to reduce dioxins and furans, so we'll ignore them and simply increase the permissible limits of dioxins and furans. This is nonsense.

The workplace: If it's an office, it has virtually all the problems of the home with a few more, computer terminals, perhaps asbestos-based ceiling tile, mercury vapour from fluorescent lights. The workshop varies, depending on the trade, i.e., welding, and I think by now we all know the hazards that welders faced through their lives by the gases created at their work. Cabinetmaking shops, they work with particleboard and treated wood, so they're just as toxic.

Also in the workplace you will have, of course, tobacco smoking, and then you also have perfume. Now you're going to look at me and say, well, my God, here he goes, he's going to get on perfume now. But you're right; I am. Perfume inserts are deemed so lethal that between 16 and 22 states either have legislation before them or have passed legislation that bans perfume inserts from newspapers and magazines. Perfume today is not perfume; it's a chemical cocktail.

It's full of the same solvents that goes in your paint. The result is that they have been found to very, very much inflame the respiratory system and cause migraine headaches.

I would also further suggest that occupational health and safety be transferred to the Ministry of the Environment and that they be equipped to test the air of offices and workshops of the province and that the levels of air quality be set at zero tolerance with substantial fines for failing to comply.

A side note to home and workplace air quality is the obvious: Hazardous building products must be regulated out of existence.

In summation, first let me quote from a report in the Medicine Hat News of November the 26th. It was written by Phil Malnichuk (phonetic), and it goes as follows:

> "'The amount of furans and dioxins going up into the air from Medicine Hat Regional Hospital's incinerator is an unknown quantity', says the Hospital's Director of Engineering and Maintenance. 'It's not a standard that's been thought of or checked on, as far as I know right now. If tougher standards come in, a new scrubber may be added to sift out all the solids. The ash is

harmless material', he said".

What blase' nonsense. The Beluga whales -- and we know this for a fact -- the Beluga whales of the St. Lawrence River are genetically dead because of dioxins and furans. These substances are mutagenics. But this is what a hospital will state about dioxins and furans in the province of Alberta.

Again I'll quote from the Medicine Hat News, if I may, from the same date. And this is by Dave Pellecky (phonetic).

> "As a result of our calculations, I am confident that the ground levels of sulphur dioxide will be sufficiently small so that there will be no adverse effects on the environment."

This was in assuring the people of -- first of all, that Petro Canada's application for allowance to be granted for an increased sulphur dioxide emission level would not affect the town of Burstall or the surrounding countryside. Really, the poignant issue here is not how much it will affect Burstall but where those extra emissions of sulphur dioxide will land in the form of either rain or snow. And then we should measure the ground levels there, whether it's Montana, Saskatchewan, Manitoba, Ontario; what goes up must come down.

Both these reports, I think, the quotes, display an unbroadened, self-centered, self-destructive ignorance. The world cannot afford this type of mega-polluting mentality. No longer we the people can sustain the development of polluting solely based for profit-only industry, governments run for the polluter, by the polluter, elevated -- elected by the people can't go on.

For pity's sake, can we not comprehend that, if we have killed the Belugas in the St. Lawrence River, if the eastern forests of Ontario and Quebec and New Hampshire and Vermont, Massachusetts and Maine are dying from acid rain, the forests of West Germany and Czechoslovakia and -- Poland's, I think, are almost gone or dying from acid rain, it's only a matter of time before we die as a race. There's no if, and's, maybe's or but's.

But perhaps this is the fate of the human being. Perhaps this is the best thing that ever happened to this marvelous place called earth. But, you know, the problem is that, when we go -- and we are going -- look at what we're taking with us. But the spiders will probably survive. Thank you.

MODERATOR MILLARD: Thank you.

Gary Drefs?

GARY DREFS: Good evening, everyone. I am speaking to you tonight as a representative of the Canadian Chemical Producers Association and also Novacor Chemicals Limited, who are active CCPA members.

The CCPA represents over 70 member companies producing a broad range of petrochemicals, inorganic chemicals, specialty chemicals, worth a total of some $1 billion annually. Industry is highlyly trade-oriented, and about half of its production is export.

Within Alberta, the CCPA represents a dozen member companies with assets of $7 billion, employing 6,000 people, with a payroll of 250 million. The products manufactured are valued at $4 billion, with 50 percent destined for the export market. Our plant operations are generally well-scaled, our markets global and our competition international.

Locally here in Medicine Hat, Novacor Chemicals owns and operates a world-scale methanol manufacturing complex employing 150 full-time employees and spending over $7 million per year on supplies and services. As well, the contribution to City revenues through property taxes and purchase of utilities is significant.

Methanol is one of the major chemical building blocks with a wide range downstream of consumer uses. One new and rapidly growing use for methanol is in the development of cleaner burning motor fuels. This is done through the conversion of methanol to the ethers for addition to gasoline or the direct use of methanol rather than conventional gasoline or diesel fuel. A local example is right here in Medicine Hat where the City has in fact converted one half of the transit bus fleet from diesel to methanol.

The CCPA on behalf of its member companies accepts the responsibility of acting in an environmentally-responsible manner and is committed to the responsible development, introduction, manufacture, transport, storage, handling, distribution, use and ultimate disposal of all chemicals and chemical products in a manner which minimizes adverse effects on human health and on environment. The Association supports the inter-dependence of economic and environmental objectives and has also supported the objective of a Clean Air Strategy for Alberta.

The CCPA has previously submitted its comments in written form for the panel to read, and I won't reiterate the statements or specific issues and representations described in that briefing. Rather, I would like to outline just three practical initiatives which our Medicine Hat facility has already either completed or is actively pursuing to reduce environmental emissions.

Firstly, since 1987, the proportion of capital spending on plant changes and improvements related to safety and the environment have increased significantly. This year, we expect a safety-environmental spending of 35 percent of our total capital program. For 1991, this percentage is budgeted to climb to 55 percent of total capital spending. Continued significant spending in this area is anticipated as we strive to reduce environmental emissions to the lowest feasible level. None of this spending is required by government regulation. Rather, it is driven by our own desire and philosophy to operate plant facilities in an environmentally-responsible manner and at a level which is better than government regulation. Important also is the realization that these activities take careful planning and implementation and cannot be completed overnight.

Secondly, a significant reduction in environmental emissions can be achieved with energy efficiency prudence. The chemical industry has monitored energy conservation for almost 20 years and has documented a reduction of 40 percent in the amount of energy required to produce a pound of product. Although our Medicine Hat facilities have shown modest improvement in energy efficiency over the years, the largest opportunity for improvement comes with design and construction of completely new facilities. Our first two plants were built and started up in 1975 and '76. The third plant, started up in 1981, operates with 20 percent less energy per unit of production than the first two plants. Should our company build a new plant today, a further 10 to 20 percent energy efficiency improvement is certainly feasible.

Thirdly, development and application of better science and process technology can reap economic as well as environmental benefits. Allow me to illustrate with one example of our Medicine Hat facilities. Part of the methanol process involves heating methane gas and steam to high temperatures to form hydrogen and carbon oxides. Through process technology development, it's been learned that proper conditional injection of carbon dioxides to the process will increase ultimate methanol production. In Medicine Hat, we purchase by-product carbon dioxide which would otherwise normally go to atmosphere and inject this CO/2 into the process. Our development work has shown an increase in methanol production of 3.5 percent -- that's the economic benefit -- and a net CO/2 emission reduction per ton of methanol of 2 1/2 percent -- that's the environmental benefit.

Ladies and gentlemen, thank you for this opportunity to comment on a Clean Air Strategy for Alberta, and as a member of the Canadian Chemical Producers Association, along with other stakeholders, we look forward to future opportunities for helping to shape Alberta's Clean Air Strategy.

MODERATOR MILLARD: Mrs. Swan?

MRS. SWAN: Thank you, Mr. Chairman. I am here this evening to make a short presentation on behalf of the Grassland Naturalists, and I'm also a member of a local citizen's committee, which has given me some insight into emissions, particularly for the incinerators.

At this time, we would like to thank the Government of Alberta for holding these hearings, and I do trust that the input from the citizens of Alberta will be acted upon with as little delay as possible, as we are all aware that time is short when we know what jeopardy the planet earth is in. We cannot keep putting off corrective action because of economics. People need clean air to breathe; our medical costs escalate. People need clean water; also the same. And people need safe food.

The advisory panel which has been set up to deal with a Clean Air Strategy for Alberta does say that it is a global problem and that we are aware of, those of us who are reading on the problem. However, here in Alberta, we cannot wait on the rest of the world. We have to act now and do our little part, because whatever we achieve here in Alberta will help the global scene.

The information package which I received has been very helpful, and I would like to thank the committee and/or the department responsible for producing it. And I do have some questions regarding the information in the pamphlets, and perhaps there is a member here who could answer it or somebody representing that particular group.

In one of the pamphlets or the booklet, it was estimated the amount of carbon dioxide given off by the burning of fossil fuels in various petrochemical plants, and other findings. Now, most of this carbon dioxide goes into the atmosphere, but I wondered if there are any figures which estimate the amount of this carbon dioxide that can be photosynthesized into plant matter by one hectare of forest in Alberta in one year. I think this would be valuable information, because it would show us to what extent are we out of balance with the environment, because we do burn a lot of fossil fuels here. And perhaps it might indicate that we should leave the forests standing to help rid the environment of excess carbon dioxide rather than decimating them for pulp mills.

It was also estimated that -- the quantity of sulphur dioxide given off into the atmosphere by the petrochemical industry and by the burning of fossil fuels. This was also estimated. And I am wondering, isn't it viable and possible to build scrubbing towers that can more efficiently remove sulphur from petrochemical products?

Also, talking of sulphur dioxides, the same thing as the first presenter, I was quite surprised that Petro Canada would want to increase the amount of sulphur dioxide which they are emitting from the plant at Empress. I was even more surprised that the people who attended the public meeting would not question this a little more. The fact that they saw this alkali in Saskatchewan really doesn't help the problem as it moves further east or northeast. In fact, as the previous speaker said, what goes up must come down, and if that's the case, it could certainly reach the Canadian Shield and do a lot of damage as acid rain.

When talking about sulphur dioxide in the handouts, which is vented into the atmosphere, there was no mention made of the harmful effects of mercaptan sulphur, and in the production of gasoline, mercaptan sulphur can be corrosive. Is mercaptan sulphur part of the sulphur dioxide emissions? I don't know. Can it be formed in any way similar to the production of ozone in the lower part of the atmosphere? And we know now that ozone in the lower level is very harmful. Mercaptan sulphur is known to be corrosive and -- which means it could be harmful as well. There are tests devised for this, and I'm wondering if the petrochemical industry, our refiners, use them, and perhaps if we can update a lot of this, I would like to know that.

General questions: I was wondering if the Government of Alberta have any regulations regarding stack emissions? I'm not talking about ambient air emissions. I'm wondering about stack emissions. I think it would be important for them to put them in place if they don't have them.

And also, in the material which I read, there was quite a lot of talk about the objectives which Alberta is hoping to reach, but there were no dates given, and I really think this is a big loophole, because we can't keep on putting it off forever while industry decides to come around and be more environmentally friendly. We should have dates there, and the Government should be quite strict in seeing that industry adheres to them, to the new objectives.

In this handout, it mentioned that there would be a hearing into other emissions at a later date, and I would specifically like to know when the hearings will be held to do with emissions from hospital incinerators and hazardous waste incinerators, especially since our hospital here has decided to become the regional incinerator area for hospitals in this area, and we know that they burn a lot of plastics which produce furans and dioxins, which are very, very harmful.

And the other reason I would like to have these fast-tracked, as the jargon goes, is because there has been some talk of a possible expansion of the hazardous waste at Swan Hills. If I lived in the Swan Hills area, I would really be upset. The other thing is, gee, I wish they would change the name of Swan Hills to something else. I don't know whether they had it first or I had it first, but it's kind of tough for me.

For particular recommendations to the Government, I really think our Government has to lead by example, and I can't say that I really feel they've been leading by example in any area up to now, but I hope they will prove me wrong.

The fleet trucks: Maybe something specific which the Government has for both its workers and its use. Perhaps they should consider changing over from gasoline to natural gas or propane or methanol, which are less harmful to our environment. I feel that all publicly-owned buildings that the Government has in Alberta should be environmentally friendly. And I really feel that they are very wasteful on electricity and this is one area in which they could show the rest of us how we should be. I feel also that any buildings which the Government has now or which they may be intending to build, that they should look at solar heating if it can be incorporated into the design and in fact make sure that it can be incorporated into the design.

I think that the Government of Alberta should put some money into research, probably at the university level, but I do feel that industry should be encouraged to set up their own research funds for this area. In fact, I was thinking that maybe our Government should make it mandatory to industry that they have such a fund before they even give them a licence to operate.

The Government spends a fair amount of our money on public relations. A lot of this money is to tell us not specifically what to do with our environment, and one specific area that they have cut the funding in which I have found -- I think it's a false economy -- is in the area of what was called the economy fuel calculator, which we could all have picked up at our gas stations over the last couple of years, which was very good for motorists so they could keep their mileage, their gasoline and work out if they were getting good gas mileage or not. Well, recently, they have not been available at the gas stations, and when I inquired of the Government, I was told that their budget has been slashed drastically and they couldn't afford to put these out anymore but if you go to the bother of phoning on the right number, perhaps they will send you one. I think this is a false economy and perhaps some of the advertising that they do in newspapers, they could be well directed to having this economy fuel calculator available at gas stations; that is, until we all change over to natural gas or propane or something that is better for our cars.

Finally, I would like to say that we must not forget that small is beautiful and this is really for our province as well as for the world. We in fact should be trying to be sustainable in our own province and not always thinking that we have to get bigger and better and grow, because our earth cannot stand it. Thank you very much.

MODERATOR MILLARD: Thank you. Are there other people that would like to make a submission? Yes, sir?

DR. SHEPHARD: Our lady asked a question. Would she like the answer now?

MRS. SWAN: Yes, I would.

DR. SHEPHARD: I worked out -- or I got from Alberta Forests and Wildlife the area of forest required to convert carbon dioxide back to cellulose. I forget the number, but what I think it worked out to was, per power plant of the city of Medicine Hat, .3 percent growth will average out at 150 megawatts over the next 25 years, okay? And the forests, evergreen forests required, the carbon dioxide emitted from that plant back to cellulose would stem from here to the Saskatchewan border and here to the American border.

MODERATOR MILLARD: With respect to your other questions, Mrs. Swan, I'm not sure if anyone wishes to comment at this time. If not, what I would suggest that we do is to -- I think the Clean Air Strategy people can perhaps get back to you and answer at least some of them. I'm not sure if they can answer all of them, because some of them are rather broad, but certainly we'll try our best to endeavor to answer those.

Now -- yes?

DR. SHEPHARD: Perhaps I could be helpful on the sulphur dioxide, being a Petro Canada person. The process for removing hydrogen sulphite from the natural gas required, if you burn a little bit of it, you get sulphur dioxide, which it shoots back and it attacks the hydrogen and then pure sulphur and water. So then if you have water and you drain off the liquid sulphur, and all the noxious gases are gone. So by taking hydrogen sulphite and reacting it and then feeding it back on itself, then, in theory, there should be no murky deposits whatsoever. And on the mercaptans, sulphur dioxide and sulphur dioxane (phonetic).

MODERATOR MILLARD: Thank you. Now, does anyone else wish to make a submission? Yes?

DR. SHEPHARD: I have a six-page document, but I would like to say one or two things --

MODERATOR MILLARD: Why don't you come up and --

DR. SHEPHARD: -- that I consider important. Well, in 1972, we had the so-called energy crisis, which was not an energy crisis at all, it was a balance of payments crisis, because the price of energy, petroleum, was put up that high and some countries had difficulty buying it.

But the result of that was our Federal Government decided that we're going to save energy, and so what they did was decrease the compression ratio of the auto-cycle engine, the gasoline engine. Well, this engine operates better when -- it operates more efficiently when it operates at higher compression ratio. So what the Government has done is decreased the compression ratio of the engine, made the car less efficient, forced us to use smaller engines at a higher speed that wear out more quickly, and I couldn't think of anything more backwards that could have been done in the history of man, but our Federal Government did it.

Now that we're onto the concept of small engines, we over-inject into diesel engines so that we get black smoke coming out. So what's the cure for that? As these engines are only run 17 percent efficient, rather than using electrical energy, which from a thermal plant is developed at around 34 percent efficiency, and using a trolley bus, here we use diesel buses with engines that are too small, and by over-injecting, then we put out black smoke and carbon particulates.

And so the cure to this is to go and use methanol. Well, methanol is made from methane gas, which has an energy of 23,650 b.t.u.'s per pound, and we convert it to methanol, which has a value of 9,600 b.t.u.'s per pound, so we throw away 14,000 b.t.u.'s of energy and two of the worst polluters identified, carbon dioxide and water, to add to the environment directly. And I don't consider this as being particuarly smart neither. And yet in 1972, we have the first action, and it was just this year that Jake Epp flew out here to Medicine Hat and announced that millions of dollars will been spent degrading energy because of a problem that the Federal Government created in the first place.

Now, if we're going to use energy, then we're looking at applied thermodynamics and we have to look at temperature in minus temperature out divided by the temperature in to find out the efficiency of what we're doing. And this pretty well forces us into using co-generation and into a gas turbine at about 2000 degrees Fahrenheit, out at about 1500, 1400, into steam boilers, out again at 1150 degrees Fahrenheit, out at, what, 100 degrees, into greenhouses, and we have used the energy. This figures out at about 65 to 70 percent efficiency. And yet we have had a power plant down here that's been operating for years and years at 19 percent efficiency and it's up to 30 percent now.

The Energy Resources Conservation Board has just approved coal-fired generating plants and denied permission for Medicine Hat to expand their plant into a co-generation facility, and so I was simply pointing out that we're going backwards just about as fast as we can go. That's it.

MODERATOR MILLARD: Thank you.

Does anyone else wish to make any comments?

Let me ask you a broad question: From what you have read before you came to the session this evening and from your own knowledge and from hearing what people have been saying, how many of you believe that there is a greenhouse effect problem that we are facing? Could you perhaps just raise your hands, those that subscribe to that.

It looks like most people agree with that proposition. What would you suggest as a means of reducing emissions of carbon dioxide? Do you have some specific suggestions that might be changed? Yes?

GRETTON SWAN: I would say that education would be very important, the school process. I am of the idea that we should, instead of teaching the ordinary algebra, calculus, et cetera, we should teach more statistics and more probability so people are -- can do a graph and know -- be able to observe trends. We are programmed, and it is not to observe trends, only to observe things that happen suddenly. And because we are so mentally programmed, that we're not aware of what's happening. So that's why I thought I would mention that, possibly I think changing our curriculum to be much more statistics-oriented. Calculus and -- they are just as good and just as important as English would be, as the other forms of materials.

MODERATOR MILLARD: Other thoughts on that subject?

How many would be prepared to change lifestyle in order to reduce emissions?

Again, a pretty general response. What do you think should be the driving force in terms of changing lifestyle, some kind of financial incentives or is it a moral proposition or what do you -- guidelines or education or --

GRETTON SWAN: Reduction of newsprint.

MODERATOR MILLARD: Pardon me?

GRETTON SWAN: Reduction of -- by the media of newsprint, of papers, the large paper. This is just one thing. But paper in our garbage dumps is a major problem. One-page advertising, reduce -- or put a tax on items like that. Reduce the amount of coloured paper. If you burn these papers, often you get a flame which is green or crimson maybe, and I'm getting tired of having that -- the reduction of paper is one way that we could go about it, which is harmful to us.

MRS. SWAN: And it would benefit our forests in the process.

MODERATOR MILLARD: Do you subscribe to financial incentives or disincentives or taxes or higher charges for some kinds of products? Is that --

MRS. SWAN: Are you talking about financial incentives to industry?

MODERATOR MILLARD: No, I was thinking in terms of consumers.

MRS. SWAN: Consumers? A tax is probably

better.

MODERATOR MILLARD: Pardon me?

MRS. SWAN: A tax would be better.

MODERATOR MILLARD: A cost rather than to --

MRS. SWAN: Yeah.

MODERATOR MILLARD: Yes?

RANDY MARSHALL: Perhaps an incentive to maybe be more -- to convert our vehicles to run on natural gas or propane. As this gentleman said, that it's more efficient to use methanol than other forms of fuel, especially gasoline. We know and we have proved that we can efficiently run a lot of heavier types of vehicles on natural gas, and the engines seem to have worked just as well, burned the fuel longer, maybe not as powerful, but you still have to reduce the speeds on the highways anyway and then maybe still use those kinds of methods as well. But it's quite a costly situation to get into and it won't be overnight, but I think the Government might be able to help us out on that.

TOM PEKOE: When I lived in New York City, I never used my car. When I lived in Toronto, I never used my car. When I lived outside of Toronto in Ontario, I used my car once a week. Then I came here. This is not designed for people to live; it's designed only for -- to serve to work and produce money. We have become a consumer, and that's your whole society, and that's what's wrong.

I'd have to drive a hundred miles a day, so two days a week, I don't drive anywhere. So it's -- in the west -- well, okay, Medicine Hat, as Dr. Shephard says, should be running its stupid buses on electricity. Copenhagen does it, Toronto does it, Stockholm does it, but not Medicine Hat. We would rather have these mega-monsters belching fumes, never arriving on time, and killing the environment at the same time. That would be a great step, wouldn't it?

MRS. SWAN: But how do you produce the electricity without causing pollution? That's --

TOM PEKOE: Dr. Shephard said that.

MRS. SWAN: That's pollution.

MODERATOR MILLARD: Yes?

GRETTON SWAN: I would like to see incentives, tax incentives, to virgin industries be reduced and instead of giving a huge amount for the paper industry, for instance, and building of plants -- anything that starts from scratch with nature should be reduced, and I can see bigger incentives towards recycling programs, and right now it's the very opposite.

MODERATOR MILLARD: Yes?

DR. SHEPHARD: I would say that, for the answer to your question, or one of them, the pleasure of gaining a higher education and using it and achieving the effects, whether you become a biologist or an engineer or a chemist, this becomes life's delight, to participate in something of excellence and to develop your personal excellence.

So I guess my suggestion would be we don't really need Government incentives. Let's get the Government to stand out of the way and let the people show what excellence they have. This is just a challenge. Every time you go to a meeting like this, there are people who are more than enthused about the possibility of doing something proper for our environment, and so it's a matter of listening to people. It's a pleasure to contribute.

MODERATOR MILLARD: Yes, Mrs. Swan?

MRS. SWAN: In reaction to that, I have to say that I elect the Government so I have some say in the people who are in the Government and I really depend on the Government to put in place regulations and policies and legislation that will control those private individuals who perhaps want to produce, pollute, without any consideration for the environment. The fact is I really don't particularly trust industry.

MODERATOR MILLARD: Other comments on this subject?

GARY WOLOSHYNIUK: I just have a question for the last speaker. How do you develop trust for industry?

MODERATOR MILLARD: Sorry, I can't quite hear you.

GARY WOLOSHYNIUK: What does industry have to do to gain people's trust, in addressing the last comment?

Does anyone have an answer how the industry can gain people's trust? That's a major problem.

MODERATOR MILLARD: Perhaps the exchange of information is as important a matter as any, discussions, communications and -- so that all sides understand what the other side is doing and trying to do. I think a lot of distrust stems -- from my own experiences, a lot of mistrust stems from not understanding or not having the information. Frequently, the other people are not quite as bad as we think they are and et cetera.

Yes?

TOM PEKOE: Could I just go back to that question for a minute, how would you power the electric buses? I live on the top of the Cypress Hills. The fields out there are only used once a year to grow, a lot of them grass, and I'm looking at wind mills in Pincher Creek.

Twenty years ago, the city of Medicine Bow, Wyoming was powered -- Medicine Bow, Wyoming, with a population of 5,000 people, at that time the population and then it dropped because the oil boom was over, in the region around Medicine Bow were three wind mills, three wind mills, and yet the city of Medicine Hat wants to burn natural gas and electricity. This is absolute nonsense.

Now, okay, industry -- industry and trust, there is an example. The gas industry wants you to use gas, the oil industry wants you to use oil, but for the past twenty years, they have done nothing but try to decimate all the efforts of solar producers, wind producers and hydrogen producers. And that's why people don't really trust industry, except the shareholders, because they have to have a profit. The shareholder is not willing -- and maybe we just have to convince the shareholder, because they don't help you, they're dying too. But the shareholder wants their blood. That's why they bought shares. So how do you blame the CEO of Exxon when the Valdez piles up on the rocks? He's only doing what the shareholder wants him to do.

MODERATOR MILLARD: Gee, I can't agree with that. I don't think any shareholder wants a Valdez experience.

TOM PEKOE: Sir, I would really disagree, because the environmentalists on the West Coast were trying to tell the shareholders of Exxon what would happen when they went from a double-walled tanker to a single-walled tanker regulation, and the shareholder and the CEO did not listen, and the Government didn't listen.

MODERATOR MILLARD: Well, I think we quite just disagree. Yes, Mrs. Swan?

MRS. SWAN: Medicine Hat is one of the areas which has a lot of sunshine, and about ten or fifteen years ago, we were trying to get some seed money from the Government to set out on solar research. Well, it collapsed because we couldn't get any money out of the Government for that. Now, if the Government is serious about other forms of energy, perhaps they could fund some research into solar energy in the city of Medicine Hat, which gets a lot of sunshine hours.

MODERATOR MILLARD: Any -- yes?

DR. SHEPHARD: In my engineering career, I started out with the C-I-L explosives plants in Calgary, and I learned my machine design from Neil McNaughton (phonetic) with a grade 3 education, a mechanical design genius. He held most of the patents for the packaging of hydrochlorides, around the world for Imperial Chemical Industries.

I next went to Edmonton, and Imperial Chemical Industries had a representative going to Edmonton to find out what those crazy Albertans were doing, and they were taking the ideas back and selling it around the world as British technology.

I observed the same thing when I

was the chief engineer for Dominion Glass of Montreal with the Dominion Glass plant here in Redcliff; when I took their machines to the United States, the ideas were taken off and used as American inventions.

And I see that Albertans have the ability and the desire to do these things, and yet I find that, with my project trying to get the Dominion Glass plant going again, I had a member of the legislature phoning the United States trying to get competent people to come and run the glass container factory, when we are the people that took Dominion Glass earnings from 86 cents a share to $1.24 and distinguished ourselves. We've got a problem in the province of Alberta when people think that intelligence and competence is elsewhere. And we're a dying society until we get some changes, and political lying on top.

There is a lot of competence here that can take wind power and develop it, solar power and develop it. This Medicine Hat and Lethbridge area is one of the United Nations sites for the development of -- or the production of wind power in the world, and yet when you write a letter to the City of Medicine Hat wanting to use renewable energy here, they won't even answer the letter. And when we want to take the city of Medicine Hat power plant and double the efficiency of it so that it will become one of the engineering dreams on the North American continent, you don't get to first base. We have an attitude problem in Alberta with the status quo.

MODERATOR MILLARD: Yes?

TOM PEKOE: You know, if I may just dwell upon this for a minute, you see, let's go back to business. Business is TransAlta. Business in the case of electricity in Medicine Hat is the City; it's government, but it's business as well.

Now, there is no reason why the Government could not fund each individual homeowner to put in their own solar installations. Now, this would probably clash with the Medicine Hat beauty laws, because they don't like satellite dishes, but I think we could make an exception in this case. But, you see, if the Government would fund people to put in their own solar installations, then allow the people to pay the Government off as they pay their electric bill right now, think what we would be saving.

MODERATOR MILLARD: Other suggestions or comments? Yes?

DR. SHEPHARD: Our power plant here for years has kept the river clean of ice. That's wonderful. Yet we burn natural gas. 3,000-degrees-plus Fahrenheit is the temperature within the flame, and, thermodynamically, we should be using processes so that we're using 2500, 2400, 2300, 'til we're right down to 70 degrees Fahrenheit, what we want, probably the most useful use of natural gas that we can possibly get.

And so I don't know the economics of it, but if we have a hot water line coming out of the power plant or a smaller power plant to feed a small area and people use heat pumps, take that low-quality heat from the power house and to heat their homes, then return the cold water to the power plant, then we don't upset the ecology of the river.

And if we should look at -- or drive into Calgary, it becomes pretty desperate now when you pull in fairly close and you see this black mass in front of you with a brown cap on it, that by heat pumps, using electricity generated in a much more intelligent fashion than the brute force of a furnace, that this is a possibility for the future, if we can get our thinking machines going.

MODERATOR MILLARD: Other comments or suggestions?

Well, perhaps this is the time when I can say thank you very much for coming out. We appreciate your suggestions and comments and will have regard for them, and you will hear the outcome in due course. Thanks again for attending our meeting.

(Meeting ended at 8:30 p.m., Wed., November 28th, 1990)

COURT REPORTER'S CERTIFICATE:

I, Louella Wood, CSR(A), Court Reporter, hereby certify that the foregoing pages contain a true and correct transcription of my shorthand notes taken herein, to the best of my knowledge, skill, and ability.

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ORIGINAL

CLEAN AIR STRATEGY FOR ALBERTA

Transcript of Proceedings

Regional Meeting

Held at Calgary, Alberta, on
Wednesday, December 5th, 1990

Appearances:

Vern Millard -	Moderator
Susie Washington - and Cheryl Bradley	Western Environmental and Social Trends
Louella Wood, CSR(A)	Court Reporter

Transcript of Proceedings

(Meeting commenced at 7:10 p.m., Wed., December 5th, 1990)

MODERATOR MILLARD: Well, good evening, ladies and gentlemen. Let me say on behalf of the Clean Air Strategy people welcome to this evening's discussion group.

The -- well, first of all, before we start, the group is small, so why don't we all come forward and sit so that we can be a cohesive group. We're all pretty friendly, so there aren't any problems.

My name is Vern Millard, and I've been asked to moderate these regional sessions. I might say that we've been in a variety of localities throughout the province, Bonnyville -- and I probably won't get this list correct but -- Bonnyville, Fort McMurray, Peace River and Pincher Creek, which we never quite got to because of a storm, and Medicine Hat, and tomorrow we go to Red Deer, and Edmonton. And the whole purpose, of course, is to get the public's reaction to the questions that face all of us in terms of problems in relation to the planet.

I've been asked to provide some introductory remarks, and I would like to make some comments, but first of all before making them, I would like to say that the source for the material that I am drawing on in terms of these comments -- assuming that I can see the screen, and I'm not sure about that, but I'll try, and -- but the source for the comments is the fact sheets that Energy and Natural Resources and Environment, the two Government departments that are involved in this, have put together to address these various issues. I spent a weekend going over the material a few weeks ago, and I was really very impressed with the documents and the fact sheets, and I would really commend them to you in terms of looking at them and reading them and digesting them in terms of the issues that face us today. And let me just summarize some of the reactions I took from looking at those documents.

Well, we start, really, with the question of what is the Clean Air Strategy? And, basically, as I'm sure you all appreciate, that the planet has increasing problems with regard to the circumstances on which we all live. And here's where I run into the problem; I can't see very well. There's a growing consensus among scientists and people who really investigate these matters that emissions must be reduced in order to solve some of these problems, and the Clean Air Strategy is a means of encouraging public discussion by all of us in terms of these questions. The Clean Air Strategy will identify the most important issues. It will develop practical approaches for reducing emissions. At least, that's the whole theme of the exercise. And it will recommend policies and programs.

The Clean Air Strategy for Alberta is a four-stage process. The first stage occurred in September of this year when a group of involved parties got together and discussed the various questions relating to developing a clean air strategy for Alberta. The group identified the basic problems and -- what does it say, Susie? -- there is a general consensus of the need to reduce emissions and -- and what?

SUSIE WASHINGTON: And develop a strategy.

MODERATOR MILLARD: Develop a strategy. I should have somebody else reading this.

The second stage is what is really going on right now, the various regional meetings that we've been holding throughout the province.

Then the third stage is a repeat of the workshop in which the people that are involved will get together and consider what has come out of the regional meetings and what has evolved since the original workshop.

And then, finally, out of this whole process, we'll develop a program or proposals for the Government.

The next question that really

arises in terms of this whole issue is what are the major problems? And, as I said before, they relate to the growing consensus that we have a problem with respect to emissions.

And there are really three basic problems that have been identified. The first one is the so-called greenhouse effect or global emissions -- or global warming, sorry. And this is caused by carbon dioxide and other gases being emitted into the atmosphere, and as a result of this, the energy emanating from the earth is re-directed back to the earth and we end up with the so-called impact of global warming.

And I'm not sure if any of you have seen the long-term mean temperatures for the earth, for the planet, but you will notice if you have that there is this gradual in fact rather significant increase in mean temperatures for the planet. And it's really caused by the kind of schematic that is shown here in terms of the buildup of greenhouse gases and the re-direction of the energy radiated from the earth back to the earth.

Now, the second issue is acid deposition. We have heard a lot about this particular problem, particularly those of us in Alberta, with respect to acid rain and the question of SO/2 emissions from sour gas plants and NOx emissions from automobiles and so on. It's a significant problem in the world. It relates more in a sense to Eastern Canada and Eastern United States, but it's a factor that is prevalent in Alberta or is a factor in Alberta, and it's one of those issues that is a global issue.

The third problem is smog. It probably isn't nearly as -- I don't think there's any "probable" about it; it isn't as serious a problem in Alberta and the Prairies as it is in some other parts of Canada and the United States. We have heard about it in relation to the West Coast of the United States, Los Angeles and so on, and it's certainly prevalent to a degree in Eastern Canada, Toronto, the St. Lawrence Valley area, and in the B.C. area, and even in Alberta we have problems, as we've all seen in relation to Calgary and to Edmonton.

What is being done about these issues? Well, first of all, of course, there's a lot of research that's going on. And there are international conventions that are being held to address the issues. The question of sulphur dioxide was addressed in 1985 -- is that the right year?

SUSIE WASHINGTON: Yeah.

MODERATOR MILLARD: And nitrogen dioxide, in terms of an agreement, in 1988. Carbon dioxide has just been acted on in 1990, in November 1990. And in addition to that, there is research going on. But all of them relate to reducing the emissions to the atmosphere.

And one might well ask how does Alberta fit into this total scene? Well, first of all, in terms of energy production, as we all know, Alberta is a major source of energy for Canada and indeed for North America. In terms of Canada, Alberta accounts for 83 percent of gas, about 80 percent of oil and 44 percent of coal. And that's in terms of actual production, not reserves.

If you relate that to Alberta's share of the emissions, then in terms of SO/2 -- and I should be standing back so that you people can see -- in terms of SO/2, Alberta contributes about 15 percent of the total. In terms of NOx and CO/2, it's about 22 or 23 percent of the total. So from a Canadian standpoint, Alberta has the highest per capita emission rate for all of the provinces in the country. Our per capita share is roughly about 10 percent.

In terms of Canada's share of the CO/2 production, it's about 2 percent, but we also have to recognize that energy production is a major factor in terms of the economic fortunes of Alberta. Roughly speaking, the energy industries produce about $15 billion of goods and services. In terms of royalties to the Provincial Government, it's about 24 percent of the total, which represents about the same amount of the total provincial revenues.

In terms of what happens to the energy that's produced in the province, again, as I'm sure you all appreciate, about three-quarters of the energy that's produced here is exported or shipped out of the province to other parts of Canada or to the United States. So, really, in many ways, one can judge or assess the contributions to emissions from Alberta's point of view in terms of what it is doing for other areas. So, in a sense, three-quarters of the emissions that stem from the production of energy really relate to supplying other parts of Canada and North America with energy resources, energy products.

In considering this overall question of emissions to the atmosphere, which is really the source of the problem, we have to recognize that we're all involved in this. Roughly speaking, and thinking particularly in terms of NOx and CO/2, the energy industry accounts for about one-third, other industry accounts for another third, and then you and I as consumers account for the other third. It may be through the products we consume directly or indirectly, but we are a major factor in the equation.

And another question that

inevitably arises when we talk about this issue is what do we really mean by "clean air"? If we look at it from a relatively narrow point of view, we would say that -- I think it's fair to say that we would probably conclude that clean air is air that doesn't contain contaminants that would have a negative impact on our health or the health of our children or vegetation or animals.

But when it comes to a question like global warming, which is a long-term effect or can be viewed as a long-term effect, that definition really doesn't fill the bill, because it really deals with the current situation. And if we were to assume -- and I suspect that some people here might not accept this assumption -- but if we just for the sake of argument assume that Albertans are blessed with clean air today, then the problem we have is that that clean air today may in 50 years or some other length of time from now be judged as really being not clean air because of the emissions it contains in terms of the overall impact on the atmosphere. So we have to bring into the equation this time factor that looks not just at today's world and today's conditions but over the longer pull.

Now, how can we reduce emissions? And, of course, the basic assumption in terms of this question is that we need to. And there are really four main alternatives to reducing emissions:

The first one is to use less energy, we just stop -- let's see, is that "produce" less energy?

SUSIE WASHINGTON: Yes.

MODERATOR MILLARD: Sorry, produce less energy. You have to put up with me, ladies and gentlemen, because I don't see well. But if we produce less energy, we, for example, could stop producing gas, we could stop producing oil, we could stop producing oil sands and so on, and that would make a major impact in terms of the emissions that occur. Of course, it would have lots of serious consequences, but that would be one way of doing it.

Another way we could achieve that goal is to use less energy, each of us. We could drive our cars less; we could heat our homes to a lower temperature; we could do all of these things that would mean that we would use less energy. And, again, if we did that, we would have less emissions.

We can use energy -- the energy we use more efficiently. We could have better refrigerators; we can insulate our homes better; we can do all of those things that would permit us to have the same kind of quality of life, but we wouldn't use as much energy.

And, finally, another alternative

is that we can use different kinds of energy. We can use solar energy or wind power, biomass, et cetera.

So there -- but when you look at the alternatives that are available to us in terms of reducing emissions, these are the four fundamental alternatives that are there.

And then we come to the next question of how we as individuals can reduce energy -- or reduce emissions. Remember I mentioned that one-third of the CO/2 and NOx emissions really emanate from we as individual consumers. And that really -- that question is really the basic core of these regional meetings. The essence of these meetings is to get your views, your thoughts, as to how that might be achieved. There are, of course, a variety of measures that might be taken. Education is certainly an important feature. But we really want to get your input, and I hope that we will during the course of this evening's session. Now, what does that say? We appreciate your -- we're looking forward to your suggestions.

And some possibilities in terms of searching for ways of achieving a reduction in emissions are, for example, making the standards more rigid or more demanding; limiting total emissions in a particular area so that perhaps there is only a certain amount that will be emitted in say the general Calgary area; and providing incentives to reduce emissions. And there's a long list of things that can be done, and that's why we're having the meetings, so that we can get your views on that, and I hope that there will be a variety of views expressed tonight.

Well, without further ado, what I would like to do is to call upon people who have volunteered to make submissions for this evening's discussion. After we have heard from those that have so volunteered, we will see if there are questions, and perhaps we can have some discussion and see if we can arrive at some useful answers.

Now, the first person is Mr. Barkauskas. May I ask Wayne Barkauskas to come forward. Would you like to use that --

WAYNE BARKAUSKAS: Sure.

MODERATOR MILLARD: Or whatever would be convenient for you.

WAYNE BARKAUSKAS: Good evening. Firstly, I would like to thank the Commission for allowing my group to speak on such short notice. I'm with the Environmental Law Group at the University of Calgary. We're a group of students and faculty who have gotten together to investigate and do submissions such as this on environmental policy, as well as work on specific environmental cases that may be working their way through the courts at any particular time.

My submission tonight is a paper of large volume, as you can see. I will try and condense it into about ten minutes. It focuses on reformation of Alberta's automobile emission policy. I'll go through each jurisdiction firstly in Canada very quickly to show what other jurisdictions have instituted, and then I'll come back to Alberta and mention what we have or don't have.

Firstly, let's start with B.C. They prohibit the sale of automobiles unless certain environmental emission standards are met. They also state that a vehicle cannot be on the road if it's producing an unreasonable amount of smoke.

Manitoba, P.E.I., New Brunswick, Nova Scotia and the Northwest Territories also have this in their legislation, that a vehicle can't be on the road if it's producing an inordinate amount of smoke, and they each have their standards as to what is inordinate.

Ontario probably has the strictest standards in Canada. It has standards for both new and used vehicles, but in order for the vehicle to come under the scrutiny of any inspection, the owner must first be directed by the police to go to an inspection station, and if they don't meet certain standards, then they receive a fine of some sort.

Quebec has just set provisions for certain standards and inspections of motor vehicles, but, as of yet, they have not instituted any standards under regulations. It's more or less in a state of flux.

Now we come back to Alberta. We have absolutely nothing. We don't have any restrictions on how much smoke a vehicle can produce. It can produce as much smoke as is possible from a vehicle that is running, and there's nothing against that. We don't have anything against disconnecting emission control devices, which some other provinces do. In short, we haven't addressed the problem at all.

It's trite commentary to state that automobile emissions is a very large source of air pollution, even in Alberta; anytime that a chinook blows in, you can see that. It's destroying the ozone layer. It has dangerous health effects to individuals. This has all been proven scientifically. I don't want to bring up scientific studies, because that was not the purpose of what we set out to do. What we instead tried to do was look at every jurisdiction in North America and looked at all of the emission standards and in turn drafted legislation for Alberta, taking all the best things and leaving out all the worst things from each of these jurisdictions.

I actually -- I have a copy of it here. It's contained within our report, along with different legislation from each of the jurisdictions in North America. I will try and briefly cover what we have believed is important to include in such legislation.

First of all, diesel and gasoline engines produce different emissions, so we have divided it up so that diesel vehicles have different standards than gasoline vehicles. Also, the statute as it stands here provides incentives for cleaner burning fuels.

We have included specific smoke standards that can be tested. In other words, if a police officer is driving down the road and he sees smoke, there is a very simple device that he can use to measure how much smoke is coming out of that vehicle and whether or not it meets standards for a ticket.

There are included in here standards for idling a vehicle, which many U.S. states have decided to include, because most emissions occur from a vehicle when it's idling, so limit the idling of the vehicle and you cut back on emissions. Of course, there are certain exemptions included for trucking, for buses, et cetera.

There's a prohibition on removing

emission control devices from vehicles, which we think is absolutely mandatory. It's rather surprising that it hasn't been included previously.

Incidentally, I should mention right now that this is not the field of the Federal Government. The Federal Government up until now has instituted certain standards on new vehicles, in other words, when they leave the showroom, they have to meet certain emission requirements, but one year down the road, if the owner has decided not to keep up his vehicle and never get a tune-up, well, obviously, that vehicle will no longer meet those standards, it won't even come close.

What we have decided to do is institute an annual inspection for vehicles, and it would coincide with the registration of the vehicle. So, in other words, the owner would go into an inspection station, pay a very small fee, have the vehicle inspected, and then with that certificate, he could have the car registered or re-registered in Alberta.

There would be an exemption for older cars that couldn't possibly meet the standard. We have set a limit of 11 years, because from all the research that we have done through the various jurisdictions, it appears as though 11 years ago is approximately when stricter standards came into force. That way, owners of older vehicles could keep the cars on the road.

The owner would take the vehicle to an inspection station. If it failed the inspection, the owner would have one month to repair the vehicle. And because of the way that the Act is set up, the inspection should be done 90 days prior to registration, so if the vehicle fails, they still have one month to have the vehicle re-inspected.

If the vehicle fails again, the second inspection -- let me correct that. If it fails the first inspection and the owner goes and discovers that it's going to cost a significant amount to repair the vehicle so it meets standards, we have decided to set a certain limit of money to be spent on the vehicle on repairs, apart from getting a tune-up on the vehicle. That limit we have set arbitrarily at $75, but whatever would be a reasonable amount. That could be changed.

In that case, the vehicle would be taken in, it would have a tune-up done on it. If it was determined that more than $75 worth of repairs had to go into the vehicle, the owner would spend the $75 and then would be exempted for one year from meeting the strict standards of the emission policy.

When you sell your vehicle, of

course, you have to have it re-registered. The cost of the inspection would go to whoever is selling the car, because, in that way, the person who is buying the vehicle would be assured that it met all the standards and they wouldn't be buying a vehicle that, of course, they wouldn't be able to drive.

In Ontario, the stations for doing the inspections are all government-run. I would submit that that is a rather costly way of doing things. It would be much easier to keep costs down if you licensed private stations to do the inspections. It's done in California, and the way to avoid problems with fraud, et cetera, is to legislate that tamper-proof equipment, testing equipment, should be used to test vehicles, and it would give simply a pass/fail reading, and, that way, the consumer could be checked.

Also, the cost would be regulated by the Government. I don't think that garages would be too upset at keeping the price low, because people would come in and anyone who had a vehicle that didn't meet the standards of course would have to have repairs done. So it's also an incentive for the garages.

Of course, there is also a long list of licence requirements for the garages, et cetera and for the specific equipment that would be used. But, other than that, I think I've kept it within ten minutes.

Are there any questions? Maybe I haven't clarified something or there are concerns out there with a program like this. I don't see any.

MODERATOR MILLARD: Thank you, sir. That was very good. I appreciate that.

WAYNE BARKAUSKAS: Thank you.

MODERATOR MILLARD: The next person is Peter Proudlock.

PETER PROUDLOCK: Good evening. Is this one working? Great. I'm not going to take ten minutes; I'm going to go about seventeen, if you'll indulge me. I tried to get this one fairly short, but we've got a pretty good topic.

As I said, my name is Peter Proudlock. To simply state my credentials in making a presentation here this evening to the Alberta Clean Air Strategy are these:

My company is CH/4 International Limited, and we work with methane gas as an alternate fuel source for coal seams, coal mines, land fills, et cetera. I graduated as a geologist from the University of British Columbia, and my experience in the field of methane has been for over the past ten years.

Some of our recent work has also included investigations into emissions of fugitive methane into the atmosphere for the federal/provincial joint task force. Earlier this year as Canada's invited industry representative, I attended the 40-country international workshop on methane emissions from natural gas systems, coal mining and waste management systems sponsored by the U.S. Environmental Protection Agency and the Environment Agency of Japan held in Washington, D.C. for the U.N.'s inter-governmental panel on climate control. Our work continues to be involved with methane recovery and emission control. My presentation tonight will address atmospheric emissions of methane, its effect and some suggestions for a reduction.

The earth when viewed from space has a very thin, fragile atmosphere protecting us from solar radiation and its effects on us. Man's activities over especially the last century has dramatically altered the chemical makeup of the atmosphere.

For example, we have measurements of the atmospheric concentration of CO/2 and methane since about 1750, and not only have concentrations been steadily increasing but the rate of increasing has also been accelerating. In 1988, the World Resource Institute estimated that 18 percent of the man-made contribution to the greenhouse effect comes from methane gas, and that's a different figure than you'll see in the sheets that have been sent out.

Although the contribution of carbon dioxide at 49 percent is greater than that of methane, the growth rate of methane, 1 percent annually, is twice that of carbon dioxide.

Since methane is about 60 times as damaging to the atmosphere as CO/2 by weight -- and that's about 20 times by volume; I'm rounding these numbers -- and has a mean residence time of ten years versus two or three for CO/2, then a considerable effort should be given to reduce atmospheric emissions and maximize the utilization.

The United States Environmental Protection Agency in 1990 released findings that indicate that the reduction of methane has a far greater effect on slowing global warming, especially for the short-term, where the impact is about 120 times that of CO/2 by weight. The man-made emission of fugitive methane comes from such major sources as coal mining, petroleum and natural gas industry, land fills, waste water, animal wastes, land use changes and rice production. Although rice production is definitely not a consideration in Alberta, the other sources are to varying degrees. These sources are controllable to some extent, and, as such, control would assist in the reduction of the greenhouse effect.

Okay, methane emissions from coal

mining here: Almost all coal contains gas which is produced as part of the qualification process. This gas is predominantly methane.

Most methane within coal is absorbed. Therefore, the amount of gas that can be contained within a coal reservoir greatly exceeds that which would be contained within a conventional reservoir under similar conditions, and, as such, the pressure within the coal is also lower. Only a small amount of free gas is situated within the porosity, which is in equilibrium with the absorbed methane.

Once the pressure is disturbed, the de-watering caused by mining -- as -- when de-watered, the free gas is released, and the absorption then starts to proceed.

The volume of gas in coal which is emitted when mined is dependent upon the rank and depth. And, by rank, if any of you don't know -- it's not that clear -- we've got low, brown coals, lignite, as are found out in the prairies, shown in the reds and oranges. The higher-ranked coals, as we get into the mountains, that are more higher -- high in carbon content are the yellows to the top. The depth is shown across the bottom and the gas content up the side. This is a guideline when looking for this.

Since much of Alberta's coal

production comes from shallow, lower-ranked plains coals, the emissions are not expected to be high per ton of coal, but almost 20 million tons are mined annually. Presently, coal mined in the mountains -- and it's about 10 million tons a year -- is reported to be not overly gaseous, but coal in some areas of the province is very gaseous. Besides the gas within mined coal, any gas contained within adjacent seams and rocks that is disturbed by the mining will be released, and this amount often is much greater than that within the coal that is recovered itself.

Our work has indicated that Canada emits about 500 million cubic meters of methane per year from 70 million tons of coal mined. We have not precise emission figures for Alberta, but Alberta mines considerable coal -- and that was shown earlier; it's over 40 percent of Canadian production -- and a proper testing program to ascertain the quality of methane emission needs to be conducted. Methods exist to economically pre-drain gas prior to mining. Where this is possible, the gas should be captured and utilized.

Another benefit of refining the technology to recover this gas from coal mining is that the technology is required world-wide, especially in developing countries where we would have a valuable export of technology. World-wide, about 4 1/2 billion tons of coal are mined annually, and from this we estimate that 81 billion cubic meters of methane were emitted in 1988, and that's approaching double what some other estimates are. Although Canada's share is less than 1 percent of this, it is important that we are progressive and indicate to the world that we are serious about reducing emissions.

The developing world, especially China, for instance, relies heavily on the coal industry. China has recently stated that for at least the near 20 to 30 years, they will be increasing their coal output. In that China alone accounts for one-third of the world's emissions from this source and this will increase, it is imperative that the developed countries such as Canada develop the technology to both recover and utilize the gas which is so damaging to the atmosphere. The Soviet Union and Poland, as you can see here, are also large emitters and potential technology customers.

The U.S., which ranks second, is currently collecting a considerable amount of methane and making money doing so. They are expanding their collection systems, which are mainly surface pre-drainage wells. Canada has the ability to excel in underground system designs. This cartoon shows just a number of items that we have looked at. Given proper technology and the will, we estimate that 50 percent of emissions from coal mining can be economically recovered.

Okay, moving on to emissions from natural gas systems: Alberta has a strong natural gas industry. Indeed, about 85 percent of Canada's production comes from this province. Over 100 billion cubic meters of natural gas are produced annually. The provincial average methane content is 81 percent or about 85 billion cubic meters of methane. About 2 billion cubic meters or 2 percent is listed as flared. Not all of this is actually flared; some is lost as fugitive methane. Although we have no data, we have estimated that perhaps 5 percent or 100 million cubic meters is vented as fugitive methane emissions. Much of this could probably be recovered.

In areas of the world where older distribution systems are in use, there is leakage that is unaccounted for, but Alberta's systems are new and the quality of repair and maintenance is high, so this loss is minimal. Most losses occur in testing flaring of solution gas, et cetera, and also plant shut-downs and things like this. This is certainly an area that needs evaluation.

This is, however, only the amount

that is originally metered or from the well head to burner tip. There is no accounting for gas lost from oil production, surface and other leaks and/or from wells, for instance, that have long been since abandoned but are leaking. Some companies are currently facing high costs trying to control gas leaks, especially in areas of the plains where rock is poorly consolidated.

The technology of geophysical logging is second to none in the world. We have the capability of measuring leaks of less than 1 cubic meter a day. Another area of concern is where a leak behind the casing from a deeper, higher-pressure reservoir has been flowing up the well bore and into another higher lower-pressure zone. Given a long and large enough leak, especially if the same problem exists in a number of wells, then this zone will become over-pressured, and eventually this gas will migrate to the surface and enter the atmosphere as fugitive methane. It is also a drilling hazard.

The technology to measure these leaks has been developed in Alberta. We know that these types of leaks exist. We do not know the magnitude. The implication: That the natural gas industry is unwittingly emitting a considerable volume of undetected fugitive methane. This area most certainly needs to be evaluated, for with any move to switch to natural gas, drilling and emissions will increase. We are faced with the fact that, if fugitive methane leaks exceed about 1 percent of production, then the advantage in reducing carbon dioxide and the greenhouse effect is lost. Therefore, we must know how serious this problem might be and how to reduce or eliminate it economically.

We'll move on to land fills. And I've not been in a habit of taking too many shots of that, so there's my shot. The generation of methane as part of the decomposition of organic wastes in land fills is well known. Up until the early '70's, however, it was considered a nuisance at best and a hazard at worst. The makeup of land fill gas is about 50 to 60 percent methane, the bulk of the rest being CO/2. In many areas, this gas is being recovered at a profit. No such operations currently exist in Alberta. I do not have accurate numbers for the province, but considerable research has been done world-wide.

For instance, a New York site of 600 hectares 12 meters deep was shown capable of producing 1.1 billion cubic meters of 55 percent methane gas per year for a minimum of eight years. This research also includes work into the upgrading and use of gas as is, which has -- they have found has the same corrosion characteristics of natural gas but with less NOx and carbon monoxide emissions. A detailed study is necessary before an estimate of the quantity of fugitive methane from land fills in Alberta that can be captured. The number of sites, their sizes, composition and the distance from markets needs to be addressed.

Waste water systems: Anaerobic digestion of municipal waste water has been in use for a century. This process produces by-products such as methane, carbon dioxide and hydrogen sulphite. The methane gas is easily captured and used. Alberta is currently doing well in some jurisdictions in this area. For instance, the city of Calgary's Bonnybrooke plant generates about 30,000 cubic meters of methane per day from a flow of about 400 million litres of sewage. About 80 percent of this is captured and utilized for heating and electricity generation for peak shaving. Base load displacement has not been economic. When I last visited the plant about a year ago, expansion of the capture and usage facilities was underway to improve only 80 percent. Detailed studies of all Alberta treatment plants should be undertaken to ascertain if methane recovery of the smaller plants can be economic.

This is emissions from animal waste: Again, the anaerobic digestion of animal manures has been demonstrated to be an effective resource management tool. The system is effective in reducing pathogen and nutrient levels in the manure and in preserving the water quality in streams. Methane gas is a major by-product of the process. On farms, capture systems do not need to be high-tech to be effective and a medium-calorific-value gas is generated for use by the animal husbandry facility as heating gas or for electrical generation. We have no figures currently for Alberta, but a recent U.S. study indicated about 30 billion cubic meters of biogas could be produced annually in the States. Investigations into the use of such systems under Alberta's conditions are worthwhile.

Okay, we get emissions from land use changes: In many areas of the world, large quantities of methane are emitted as the result of land use changes, such as deforestation, drainage of swamps, et cetera. Alberta is not a large contributor to this area, but certainly when pulp mills and dams are planned, changes must take place. The magnitude of such changes and the effect these changes have on the emission of methane as well as carbon dioxide needs to be looked at. It may be that these effects are minimal, but we certainly lack credibility in criticizing other areas of the world, especially deforestation in other countries, when we are doing the same thing here. We need hard numbers to back up arguments on what the differences are.

Looking into other sources, our

work has identified some sources of fugitive methane emissions in Alberta, but there are certainly others that detailed studies will reveal. Automobile exhaust is one such source. In reducing fugitive methane emissions, all areas need to be investigated. If we simply concentrate on a single large source, we may be missing a much larger overall abatement by harnessing a number of lesser sources.

In concluding here, I've discussed a number of areas of fugitive methane emissions which are controllable to varying degrees. I am most knowledgeable of coal mining emissions, to a lesser extent in the area of conventional natural gas systems, and plead near ignorance in the other areas, but our research into methane emissions in one area has led to some knowledge in others.

I have come here tonight to bring some light on some areas of concern, areas needing investigation, and perhaps ideas for further research. Work we did earlier this year has given us the estimates shown here of recovery by industry segment in Canada. In some areas, a guess only has been made. Because Alberta is an energy-rich province, we will probably be able to recover somewhere about a quarter of the Canadian total. Looking at that, we have made reduction -- recovery on natural gas to half of that, as the slide was made.

Additionally, switching to methane from higher hydrocarbon fuel sources, especially oil and coal, has other advantages in reducing the greenhouse effect. For example, coal gives off about twice the amount of CO/2 per unit of energy recovered, as does methane. This fact, that methane is such a clean fuel, gives rise to the prediction that public pressure will create a demand and a rise in price, possibly doubling within this decade, even without any other outside influences.

I trust I have presented some new information on fugitive methane emissions from man-made sources. Hopefully through sensible investigations and research, economic solutions to the reduction of these emissions through the capture and utilization can be found. As in the case of early efforts to eliminate a hazard from coal mining, it has been found that the methane itself is valuable. Hopefully the same can be said of the recovery from other industry segments.

Another comparison might be how valuable sulphur is in Alberta -- and to think that sour gas was once flared -- and for the Government and the people of Alberta to consider long and hard the consequences of not investigating and doing all we can to protect our fragile atmosphere. This is a small planet, and we all must do our fair share to protect it. The cost of not doing so may be beyond our means to pay. Thank you.

MODERATOR MILLARD: Thank you very much.

The next submitter is Eugene Gawor.

EUGENE GAWOR: Good evening. Mr. Chairman, ladies and gentlemen, it is a real pleasure for me to be with you tonight to share our common concern about clean air.

We all need clean air to breathe, to live, but are we really serious about clean air for us, for new generations to come? Don't wait. Use technology, new and modern technology; implement new strategy into Clean Air Act and Environment Protection Act.

It is fortunate now these days that there is more appreciation and understanding for the environment, for clean air, but, at the same time, the area which I would like to emphasize, for the energy efficiency, energy conservation. There is no cheaper barrel of oil or any unit of energy from energy we save, we conserve.

Improved energy efficiency is a driving force in abating air pollution, at least, should be, in helping to clean the air, the environment. It is hard for me, for the environmental, I believe so, and also for the energy conservation specialists to agree with some politicians who still think that pollution is cheap but at the same time Clean Air Act, clean air at all, and efficiency is very expensive. They believe that the only way to reduce the pollution, to reduce the pollution from the power plants, is to raise consumer price to pay more in order to install scrubbers. In order to substantiate my statement and wrong thinking by the politicians, I am going to give you some numbers. The best is to give the numbers of someone else. In this case, I am going to give you the numbers from the United States.

1988 pollution, that is, emission of the sulphur oxide -- oxides, was over 20 million ton, nitrogen oxides almost twenty thousand -- million tons. Presently, according to the new Environmental Protection Act of the United States, they are going to reduce the emission of the sulphur oxides by 10 million ton and nitrogen oxides by 3 million ton per year. The Bush Administration is going to spend about 90 million ton, but some members of the Congress are already allowing and crying almost that it will cost almost 80 to over $100 billion per year.

But the other side of the coin is, which I will tell you also, the cost by not doing anything is over $100 billion. And, at the same time, the cost of running -- more efficiently use energy, it's more than military budget, which is about $10,000 per second, what is coming to over $300 billion per year. However, already the industry United States, they saved over 150 billions by improving the efficiency since 1974, the first oil crisis, and also at the same time by reducing the emission of the sulphur and nitrogen oxides.

Another example to improve efficiency I am going to also -- to give you right now. By using today's technology and apply them properly to residential, commercial and industrial facilities, we can save over 75 percent of all electricity in Canada, 25 percent on lighting, 25 percent on drivers, and another 25 on the rest. About 16 percent is using for the lights. By replacing incandescent lights by fluorescent, we save already about 75 percent electricity, which means the bulbs, 75 watt, we can replace by taking one bulb to have the same light. At the same time, of course, they last, on average, 13 times as other light bulbs. There are some other ways to -- also to improve the lighting, but them I am not going to talk to. In Canada only by just using today's technology in lightings and use the most efficient lights, we can save about 8,000 to 9,000 megawatt and, at the same time, no additional cost; because of the maintenance and the time, the cost is below zero.

Unfortunately, there is still in Canada and United States some industries -- electrical in the city is growing comparing to countries like Japan or West Germany and in general the West Europe, and this would be like steel, pulp and paper, gas, oil and cement industry. Since 1974, Western Europe and Japan, they reduce dependence on oil in half, but our dependence has gone up, because those countries were keeping gas prices high through special taxes, realizing that energy efficiency, energy conservation was important and is still important. And that's the reason why right now we have that oil crisis, why we're hostages of the Arab countries in the Persian Gulf.

I strongly believe and will pray to God as a consultant, as an engineer, for politicians to have a vision of clean and efficient Canada we all would like to have, to see, and also for the decisionmakers to implement this act, because I strongly believe that's the only -- one of the best way is to improve the efficiency.

My presentation was just a few words like introduction and my remarks, and second part is just what is affecting -- what are the barriers to improve energy efficiency?

The first one is just lack of information, awareness, what really we are missing.

Another is just attitude, attitude all of us, attitude industry, and especially the senior management for the power generation who still believe that they are in business to sell more, but we on other side as the customers would like to have less but at the same time the quality. Utilities all over the country, they don't spend too much money on the research/development; in my case, just efficiency. The numbers are like ten to one, just by expanding the network of the power supply.

Another one is the lack of the specialized services and especially by the Government, because they don't have offices with responsibility for designing and implementing the energy efficiency and long-term conservation. And also on other side, enterprises, the companies, they don't have any -- not all of them, but they don't have special energy management departments or even offices or persons to look after it.

Another item is just technical know-how, which particularly is important in this case for the Government and people with the right attitude.

Next one is profit. Utility companies are making more by selling just more electricity.

And the last one, in my case, is the payback guff. Customers have at least ten times the time value of money that the utilities have. If we invest in energy savings, we would like to have the return in one or two years, but if we don't invest, unfortunately, the utilities, they have to provide budget to build new power stations, and, of course, the return for them is 20, 25 years. And, in this case, we shouldn't compare a two-year -- one-, two-year payback with 20, 25 years, because this will cause the misallocation of the budget and -- by starving some other sectors of the industry, by selling more non-efficient equipment.

And now the final, which is the most important for here, is the recommendations. I believe that some were raised already by people, but still I am going to repeat my recommendations:

The most important, I believe, to start, is the education and promotional programs, and this has to start from -- primary schools has to be educated properly, the industry and people involved, and particularly the Government.

Review and revise the list of advisory group members, the one which we got with the submission. It is unfortunate that that list is including some representatives who will be in conflict with their own company policy on which they might be making profit. And, at the same time, I believe the list should include really promoters of the clean air and energy conservation and energy efficiency. I would advise also to include more members who -- whom I didn't see, like from the Alberta Energy Conservation, people who already are just -- it's a branch of the Government, and others which -- like energy management programs which were run but unfortunately no longer exist.

The next one which I would like to emphasize also as a recommendation is the promotion of engineering ethics, attitude and achievements in the area of environment and increased efficiency and energy conservation. We all should be aware what people in this area are doing. And, formerly, the engineers were considered the heroes of the modernization and the new life. Unfortunately, right now, they are the villains in the age of the environmental concern.

Revised royalty charges and taxes: Royalty charges should be reviewed. Presently, Province is charging a royalty for gas which is sent to the pipeline, but it's not charging any taxes for gas wasted, gas flare.

Pollution prevention strategy, which will be the shift from control and cleanup to prevention of the pollution to have healthy economy, to have healthy industry and people.

Least-cost approach to control emission. The cheapest approach to control emission is to increase, again, efficiency by what I mentioned about the lights, and the same would apply to motors and our appliances the Chairman already mentioned.

Promote national and international importance of energy conservation. And here we just should follow the world leaders like Sweden, Japan, Holland.

Review and re-examine subsidy programs for energy producers by considering again the importance of the energy efficiency.

A research and development program still to improve our technology, despite what I said before, how much we can already improve the efficiency by using the present technology, but this is very important to be competitive in the world.

Tax breaks on the environmentally-friendly products. Energy efficiency audits, technical assistance and training programs. And all this I believe presently is run -- is both sponsored by the energy -- Minister of Energy but should be by the environmental -- Minister of the Environment.

Another one, the profits of the

utilities companies shouldn't be as a function of the supply but should be as a function of demand, customers' demands.

And my last recommendation is about foreign aid for developing countries which have the least efficient technologies, least efficient industries, that should be taken into account the very important technology and very efficient equipment in order to help them. Thank you.

MODERATOR MILLARD: Thank you very much.

Judy Bennett?

JUDY BENNETT: Good evening. I'm here on behalf of the Athabasca Tribal Corporation, which has a brief that I would like to present.

The Athabasca Tribal Corporation represents Indian bands located within the Athabasca drainage within Northeastern Alberta. These bands consist of Janvier, Fort McMurray, Fort McKay and Fort Chipewyan. Air quality issues have been subject to continuing debate in the northeastern sector of the province of Alberta since Suncor began oil sands mining operations at Tar Island north of Fort McMurray in the late 1960's. Since that time, major developments, such as Syncrude Canada Limited and a recent proposal for Canstar Oil Sands Limited, Alsands Limited, AOSTRA and the OSLO Project, have focused attention of our Native peoples and the community of Fort McMurray on the issue of air quality management within this region.

In the past five years, significant progress has been made in dealing with air quality problems in this region through the formation of the Fort McKay Interface Committee and the Regional Air Quality Coordinating Committee known as RAQCC. These committees have allowed us to address air quality through the development of an Air Quality Protocol, reassessment of regional air quality monitoring systems, and the re-evaluation of sources of noxious emissions from the existing mining and upgrading facilities. We believe that these initiatives represent a major breakthrough in approaches to licensing, approving, monitoring and conducting research on air quality.

Several principles which we believe are essential to the improvement and maintenance of good air quality in our region are described. Many of these principles have been developed through discussions of the committees noted above and through mediations sponsored by the Energy Resources Conservation Board with Suncor, Syncrude and OSLO.

There's six points that I would like to make that deal with these principles. The first one concerns existing levels of emissions. The Alberta Air Emissions Inventory completed under the direction of the Acid Deposition Research Program in 1987 indicated that SOx and NOx emission sources for the Fort McMurray region were by far the highest combined point-sources in Alberta. These levels of emissions indicate that this region of Alberta is subject to significant depositional loadings from air pollutants and, should future developments occur, will probably continue to be subjected to at least these existing levels for the medium to long-term. Little research of quality was used in the ADRP Program that is available to us to predict long-term effects from these loadings. It is also noted that the oil sands developments are very long-term sources of emissions, and as noted in Picard et al. (1987), and I quote:

> "A ranked listing of the ten highest SO/2 sources in Alberta by emission region and ecoregion is presented in Table 8. Two oil plants dominate the list, accounting for 355.8 (tons per day) of SO/2 emission, or approximately 28.1% of the total provincial SO/2 inventory.... Total SO/2 emissions in Alberta are therefore dominated by a few large sources rather than by many smaller sources."

Given this background, the Athabasca Tribal Corporation considers that our region of the province should be recognized by the Government of Alberta as unique in its long-term exposure to atmosphere pollutants. The magnitude and number of major point-sources of SOx and associated emissions dictate that enhanced monitoring of and attention to atmospheric pollutant loadings be recognized on a continuing basis.

The second point details with maximum pollutant loadings. The Athabasca Tribal Corporation considers that the regional pollutant loadings of Northeastern Alberta are presently at a maximum rate and total loadings should not be allowed to increase. We do not accept that pollutant loadings based on an arbitrary value for deposition in terms of kilograms per hectare are a satisfactory long-term management strategy for the region. Instead, depositional loadings must reflect the total amounts of pollutants which are being emitted to the air. We also note that significant long-term research is required in order to verify the acceptability of existing pollutant loadings in the region. These depositional standards must be subject to public input.

It should be clearly recognized that the Athabasca Tribal Corporation considers that, from this date forward, the total emissions in this region should decline, irrespective of future developments or projects in the oil sands mining arena.

This means that existing facilities will have to reduce their emissions and that future plants will have to substantially limit their total emissions.

The third point details with air emissions on a per unit production basis. The Athabasca Tribal Corporation considers that emission limits should be tied to units of production at oil sands mining facilities. This implies that air emission limits should be tied to ongoing technological improvements. It also indicates that standards should not be set for the facility but rather for the technology for oil sands mining plants.

We note that Suncor presently emits a much higher level of SO/2 on a per unit production basis than Syncrude or the proposed OSLO Project. The Athabasca Tribal Corporation suggests that government should consider the adoption of standards for emissions that reflect a consistent emission-to-production ratio rather than one based on site-specific or plant-specific technological limits.

This also indicates that technology is significantly improving for the control of SOx emissions in the oil sands mining region and that there is a need to constantly reassess regulatory limits which are set for existing and future facilities. We would also suggest that there is a strong role for the governments of Canada and Alberta to participate actively with industry in the development, installation and evaluation of enhanced pollutant control technologies for the oil sands mining industry.

The fourth point pertains to research requirements in Northeastern Alberta. While the existing base of data does not indicate that regional impacts from acidifying pollutants have as yet been detected, there are ample indications that site-specific impacts have occurred.

The Acid Deposition Research Program focused heavily on emissions in Southern Alberta and did not examine in detail the northern, boreal forest region on the province. Without information on emissions in the north, the province of Alberta cannot adequately address the long-term consequences of acidic deposition. A joint industry and government research program should be considered to assess potential long-term impacts in Northern Alberta.

The Athabasca Tribal Corporation considers that this research initiative, which could be focused through a committee such as RAQCC, should involve all the parties at interest in the region, including aboriginal peoples.

Regional interim target loadings will have to be verified by this long-term research program and the findings will have to be factored into any future development of loadings which are set for the region.

The fifth point pertains to the Regional Air Quality Coordinating Committee model, the RAQCC model. The Athabasca Tribal Corporation considers that RAQCC represents a model which should be carefully examined by the Alberta Government for future application elsewhere in this province. Through the RAQCC model, local participation between Native, government, industry and community representatives can be focused into a problem-solving forum which properly recognizes the interests and limitations of each party. The RAQCC also provides an open forum for the exchange of technical information between the parties within a structured and pro-active setting.

The RAQCC has demonstrated that long-term cooperation between government, industry and local peoples on air quality management is productive and can lead to resolution of long-standing highly charged issues. The Athabasca Tribal Corporation believes that this position would be endorsed by industry and government as well.

The sixth and final point, experimental pilot projects for air emission control. The Athabasca Tribal Corporation believes that the

Alberta Government should establish on a priority basis an AOSTRA-type agency which will have as its basis for research and development a mandate for the active development and demonstration of pollution control technology at major emission sources in Alberta. It is our belief that a joint partnership role for the development of pollution abatement control technology similar to that which already exists for AOSTRA should be a priority. In addition to the valuable benefits which such a research authority would have for control of emissions in Alberta, significant potential financial benefits could accrue to the province through patent and licensing mechanisms.

Indeed, it may allow Alberta to achieve a leadership role in North America in pollution control abatement technology, especially at a time when air quality standards are becoming more stringent, for example, the recently approved Air Quality Act in the United States. Technology developed in Alberta could have applications world-wide and could provide a major new industry within Alberta. The Athabasca Tribal Corporation recommends that the creation of such an agency be considered on a priority basis. Thank you.

MODERATOR MILLARD: Thank you very much.
Jorg Ostrowski?

JORG OSTROWSKI: Yes. Good evening, Mr. Chairman, ladies and gentlemen. My name is Jorg Ostrowski. I'm with Alternative Energy. My presentation consists of two parts. The first one is a number of quotes from some very important reports, some quotes from reports of the past. Number two, I have about 30 specific recommendations.

My educational background is I have a professional degree in Architecture from the University of Toronto. I have an advanced Master's degree from MIT, Architecture as well, in the Environmental Design program. Since 1976, I've been involved in full-time design, research and consulting in regards to sustainable development. All of our projects since that time have included two parts, one on the demand side management part, energy conservation. On the other side, the supply side, it's been based on renewable energy. I'm also a member of the Environment Council of Alberta, the non -- the Energy and Non-Renewable Resources subcommittee, and I'm also a director of the Alberta Association for Environmental Health.

August 1989, Toronto, the communique' from the Federal, Provincial and Territorial Conference of Energy Ministers: The communique' said:

"The ministers emphasized that conservation and alternative energy are key elements in any comprehensive Canadian strategy on sustainable development. There are many significant opportunities to invest in energy efficiency and alternative energy, and the ministers agreed that these areas represent the most cost-effective means to reduce CO/2 and other emissions."

The Brundtland Commission, which basically launched the interest world-wide in sustainable development, in its report of the World Commission on Environment and Development, 1987, said:

> "The Commission believes that every effort should be made to develop the potential for renewable energy, which should form the foundation of global energy structure during the 21st Century. Renewable energy sources require a much higher priority and national energy program research and development demonstration projects should command funding necessary to ensure their rapid development and demonstration. It is clear that a low-energy path is the best direction towards a sustainable future."

The Minister, Ralph Klein, has issued this publication thanking Albertans for their input in regards to comments about what should direct and underlie new policy in regards to environment. Page 9 of this report, these are comments from people who submitted their comments:

"Encourage the establishment of alternative technology conservation research centres and industries to replace polluting and aging industries."

"The development of solar power in place of energy obtained from combustion of hydrocarbons."

"To encourage the use of renewable resources such as water, wind and solar power; discourage use of non-renewable resources."

"We should support those productive employments which maximize the value of renewable resources."

"We must charge fair prices for water to make people choose conservation, put conservation rather than maximum use as a priority."

"And resource people that are knowledgeable about the environment should be active consultants for the Alberta Government."

"It is my strong belief that future generations have an equal right or privilege of living in an environment free from pollution and productive and renewable resources."

The report on the Green Plan consultations has a few interesting comments as well that should be noted:

> "There was unanimous support for the demand side management efforts that focus on improving energy efficiency and implementing energy conservation. At the same time, the supply side, many stress the need to develop alternative energy sources, particularly renewable resources.
>
> There was also a wide range of opinions concerning energy mega-projects, with some people demanding more environmental considerations and others calling for a complete halt to such initiatives and the removal of any further federal assistance to these projects. One strongly-supported alternative for mega-projects was to encourage small-scale locally-generated power sources."

That's the report on the Green Plan consultation, this report here.

The most recent report on the Green Plan consultation is the National Wrap-Up. I just want to bring to your attention one quote. They recommended:

> "The establishment of new research and development programs to support research into longer-term renewable alternative energy options, such as alternative liquid fuels and renewable energy sources. By the fiscal year 1991-'92, establish levels of funding equal to current nuclear and conventional R & D levels using whatever means are at the Federal Government's disposal."

The Standing Committee on Environment just issued this orange publication here. As you know, the Standing Committee on Environment, House of Commons, was an all-party committee, and it made many different recommendations:

> "The Toronto Conference suggested that half of this reduction in CO/2 could be achieved through energy conservation and improved efficiency in energy use, with the other half achieved through substituting alternatives for hydrocarbon fuels used today.
>
> Given the opportunities in this country to use energy more efficiently and effectively, the Committee concludes that the Toronto target, a 20 percent reduction of 1988 levels of CO/2 by the year 2002, is the minimum that Canada should strive for as an interim goal."

The city of Toronto has already endorsed this.

"Today, we especially cannot ignore the environmental implications of using energy. The need to restore a vigorous R & D program in energy conservation and alternative energy development is manifest.

In the longer term, the Committee sees a major role for hydrogen and electricity as transportation fuels. Depending on the means by which fuel alcohols, hydrogen and electricity are produced, these energy carriers could be far smaller net contributors to the greenhouse gas emissions than are motor vehicle, aviation, rail, marine transportation fuels today.

Although the Federal Government supports a modest program of research/development/ demonstration in transportation fuels, the Committee does not consider this effort at all to be commensurate with the magnitude of the challenge and the opportunities involved.

Therefore, the Committee recommends that the Federal Government introduce a major research, development and demonstration program with its objective being the commercial development of transportation fuels and systems that result in the lowest economically and technically feasible emissions of greenhouse gases."

1978, December, this publication on solar and wind was produced by the Alberta Government. On page 46, this publication says:

"The provision of a moderate level of passive solar heating often involves nothing more than careful attention to design. The opportunities for utilization of passive solar design concepts are very large even if only applied to new construction and only to a moderate degree."

Alberta is the highest CO/2 producer in Canada, about 33 tonnes per person per year. The Canadian average is about 16. 95 percent of our electricity is produced by coal. We have a very strong opportunity, a window of opportunity, to develop solutions that address the problem before us.

Recommendation number 1: That all government procurement be based on environmental criteria.

Number 2: That staff be hired who are open to, informed about or actually interested in sustainable development, environmental technology, renewable energy.

That the present Energy Saver series of booklets that are available at all building supply centres right now be extended to include topics and booklets on sustainable housing, photovoltaics, embodied energy, indoor air pollution and environmentally-sound building materials.

Recommendation number 4: To establish a ministry on alternative energy.

Number 5: To establish an institute on sustainable development.

Number 6: To extend the Southwest Alberta renewable energy initiative of the Provincial Government to the rest of the province with much larger funding with priorities towards energy conservation, which is the cheapest form of energy at this time. Priority number 2 would be passive solar; number 3, mini-hydro, biomass, wind and photovoltaics.

That more money be available specifically for such demonstration projects as environmental housing, sustainable communities, solar subdivisions, solar-electric vehicles.

Number 8: To establish a job creation program, a small business incentive program for industry in the environmental and alternative energy field.

Recommendation number 9: To

reduce the size of the government to be able to farm out more work to the private sector.

Number 10: To encourage the design and the construction of the first Canadian environment building. This would be a small office building with industrial bays as an incubator for businesses and industry that is being implemented, started up in the environmental technology and renewable energy business.

Encourage Alberta utilities to take on a conservation mode. This is right now being mandated in Ontario to Ontario Hydro. We have to deal not only with supply end, but also we have to deal with the demand side management as well. There's federal legislation in the United States that requires all major energy suppliers to only undertake those projects that are the most cost effective.

Recommendation number 12: To promote the concept and demonstration of environmental showcases in our provincial parks. This is something that can easily be done, and there's many examples of this both in the national parks in the United States and in other countries in the world, where working examples with educational displays be integrated into the provincial park system.

Number 13: Make more money

available for multi-family retrofitting projects, with a highlight being relamping.

Number 14: Any legislation dealing with air quality must consider indoor air pollution. It is no good just dealing with the outside environment. The inside environment to children, to the elderly and to other people is absolutely critical in either offices or in homes. And so indoor air pollution is very, very important.

The concept of embodied energy and cradle to grave. Environmental, social and health costs must be applied to all environmental reviews of energy projects. Embodied energy is the amount of energy -- and also, therefore, the implied CO/2 emissions -- of any building product, whether it's siding, whether it's this desk or the chair, from the beginning to the end, how much energy, how many emissions have been emitted during the entire cradle-to-grave scenario.

The Province should endorse as a goal, at the very least, the 20 percent reduction in 1988 CO/2 emissions by the year 2005, as recommended by the Toronto Conference.

Number 17: The termination of all provincial subsidies, rebates, et cetera, to establish a level playing field for all forms of energy.

Number 18: To establish a CO/2 tax, as other countries already have, and also perhaps a coal tax or maybe an environmental lottery to pay for the programs that I'm talking about.

Recommendation number 19: To increase the 5.2 cents per kilowatt hour that is available now for renewable energy sources when interconnected back to the grid under the Small Power Research and Development Act.

Number 20: To tighten the energy-efficient requirements of the Alberta building code and to integrate passive solar design features and co-generation opportunities.

Number 21: The Province should explore the possibility that the Alberta Mortgage and Housing Corporation institute a program of preferential energy-efficient mortgages, as has been done in the United States.

To encourage Access radio and TV to carry more programs on environment.

Number 23: To establish a centre of alternative energy and appropriate technology, such as the Sandia Labs, NCAT in the United States, SERI, as has been established throughout many countries of the world.

Recommendation number 24: To

encourage local grass roots round tables on environment and economy. Pincher Creek has already set this up. There are many small towns in B.C. that have also done this.

Number 25: To encourage urban gardening, composting, reforestation, recycling centres, such as the Architectural Clearing House in Edmonton, more bicycle paths in urban centres.

Recommendation number 27: Programs and money for the public and industry for workshops and educational programs to both the professionals and within the school, especially field trips to projects that have already been executed.

Number 28: The extraction of methane and bio-energy from sewage treatment plants and treatment centres.

And number 29, the last one: The Clean Air Strategy should be expanded and widened to allow grass roots and industry representation in the widest scope possible while we still have the opportunity.

Thank you very much.

MODERATOR MILLARD: Thank you, sir. Why don't we take a break at this point in time and come back in about ten minutes.

(Meeting adjourned at 8:50 p.m.)

(Meeting reconvened at 9:10 p.m.)

MODERATOR MILLARD: Can we proceed, ladies and gentlemen.

The next presenter is Dr. Robin Basu.

DR. ROBIN BASU: Good evening. Mr. Chairman, ladies and gentlemen, I'm pleased to see so many of you have made the effort to come and attend this regional meeting, which shows that there is a concern about the air quality in Alberta. I suppose I would have been happier to see a slightly bigger audience, but this is very good indeed at the starting.

Being the seventh speaker, I have the advantage that I don't have to break any ice. I'm standing on crushed ice already. But the previous speakers have said most of the things I wanted to say, so I'll have to take a different track. I don't want to -- I hate to repeat things.

Air pollution is a very serious matter, because it can cause death, impair health, reduce visibility, bring about vast economic losses in many different ways, and contribute to the general deterioration of both our cities and our countryside. And I'm not just saying that like a parrot. I have seen effects of air pollution and serious effects of air pollution in various parts of the world, since I have been involved in making power stations and in troubleshooting power systems in Europe and Asia and Africa. And, in Alberta, we hardly know what air pollution is on the ground level. Percy Bysshe Shelley, the poet, said in 1819 that hell is a city much like London, the populous -- a smokey city. And, of course, London is not at all like that anymore, and London has been completely cleaned up. It was cleaned up long before I went to London, and that shows how much improvement can be made. It's a very pleasant city -- world city indeed.

But we are responsible for all the pollution in the world, we human beings, because we started pollution when we invented fire, and as soon as we started to burn things, pollution started, and since then, we have burned merrily everything that we could lay our hands on. The coal was, of course, found literally after we invented fire, and the burning will go on. Of course, we have no alternative to stopping combustion altogether, because much of our industry is based on combustion, but we have to now redesign most of our systems from the point of view of the balance in the atmosphere.

It is a regrettable thing that power stations -- we even waste more energy than we use. Most of the energy systems, you will find that the net energy use is much less than the energy wasted. And our power stations are very good examples. Most of our power stations have efficiencies of the order of a little over 30 percent, unless they use co-generation, which it doesn't exist very much in Alberta. Now, this -- of course, the heat we throw out into the atmosphere and in cooling ponds and so on is regrettable both from the point of view of wastage of energy and also from the pollution and the contribution to the gases in the atmosphere that we make.

After polluting the air for many millennia, we are now coming to our senses. The air quality has become a matter of concern. But the situation is still not quite under control. We can halt this deterioration if we have the will. And, of course, there is a cost involved. Clean air is not cheap and not cheap in an industrial society, because most of the processes that we work with cause pollution, they generate sulphur dioxide, carbon dioxide and all the other noxious gases that we are concerned with.

Now, air pollution cuts both ways. If we throw too much particulate matter in the air, then the sunlight cannot reach us and, in fact, we get a cooling effect. And that is how the term "nuclear winter" comes along, that if we have a nuclear explosion in the upper atmosphere, we will be shivering within seconds. In fact, even in a solar eclipse, it emphasizes that -- there's a low temperature. But, on the other hand, as soon as we increase the number of -- amount of gases in the air, we get the other effect, we get trapping of heat, so we get the heating effect.

Now, this is something that has caused a lot of controversy. Some people don't want to accept that the world is heating up. In fact, I constantly read records about cities like Alabama claiming that they are cooler than before. Now, all this can be true, but unless we look into the various processes that are working, we are never sure whether something -- whether we have a slight cooling or a slight heating and so on.

Now, to make any changes in air quality is difficult and progress is usually slow. It's hard to believe that air pollution abatement got started in the United States as early as 1913 with the early research and development by companies to capture fine particulate matter from smoke stacks, and that matter has become quite sophisticated, but, even now, we do not really get an absolutely clean emission-free discharge from most of our power generation processes. I'm not talking about hydro or something like that but thermal coal-burning power stations.

So this is a complex matter, and

anything to do with energy is very complex, because energy affects every one of us. Every one of us has a different concept of energy. Our demands are different, our consumptions are different, and our will to change our way of life is different. In a democratic society, to do something uniform about energy consumption and use is very difficult. And so that's why there's still this non-universal acceptance of the fact that there is a danger around.

In fact, some environmental conferences that I have attended, I see a lot of heat being generated by the scientists arguing among themselves. There is a school of thought which still does not admit that there is a so-called greenhouse effect. And, in fact, at this year's International Ozone Conference in London, England, there was a considerable amount of heat without light.

To me, the rate of depletion of ozone is less important than the fact that it has happened at all or it is happening. And even if there is a remote chance of the earth's temperature rising a few degrees, three, four degrees, whatever, and the after-effects of it, whether Venice will be sinking or, British Columbia, people will have to move from the shore, these are really minor from the total effect, particularly in the poor third world countries. I think vast areas of Bangladesh will disapper completely.

Now, in this conference that I referred to just now, some imaginative solutions -- now, if there is an ozone hole -- and there is definitely, which was found in 1982 with the Antarctic -- what are we going to do about it? Now, some imaginative and rather sometimes fantastic solutions were offered.

One scientist at Princeton University is working on a plan to use lasers to blow the hazardous chemicals before they can have time to deplete the stratospheric ozone layer. This would sound rather fantastic, but it is practical. And, in fact, the so-called Star War weapons that Ex-President Reagan was so enthusiastic about, this may be a good use for them, because we can turn these powerful lasers onto the contaminating gases and we can burn them up in the lower atmospheres.

The other method of replenishing the ozone supply has also been talked about. The entire ozone layer -- to give you an idea of the size of the problem, the entire ozone layer contains roughly 3 billion tons of pure ozone. If it were to be depleted by even 6 percent in the next hundred years, we would require to replenish 54 million kilograms of ozone per day to keep it at the same level.

Now, the methods suggested are

firing frozen ozone into the stratosphere or sending up balloons with solar-powered ozone generators on board. Now, again, this sounds rather fantastic, but it is a fantastic problem so the solution has to match the problem.

Coming down to on the ground, we know that there are many ways to address the pollution problem, and it's very heartening that even young children now talk about these things. I have been giving some lectures at schools, and I was surprised that young children of seven, eight years old asked "what's this hole in the ozone?" Somebody asked me the other day. And that means that they are reading about it, they are hearing about it from their teachers, and so on.

And a colleague of mine, just one of the speakers, said that education is the very first step. Education is the very first step to change our habits with our energy and our attitude towards energy. That's for sure. And this education has to start from the childhood for the children to understand how fragile the earth's environment is and how much we are responsible for damaging this fragility and precipitating this crisis. I mean, we are the human beings that are entirely responsible for this.

So we now know the four "R"s,

which are reduce, recycle, reuse, and to that I add react, because I think we've got to react. We've got to react. When you see that pollution is being created, whether by a factory down the road or a shop or even by a neighbour, I would like to go and discuss with them the problem we are facing.

Reduction of energy use, of course, is the most important and most effective step, and it is an urgent necessity. And this, of course, has to be reinforced. Now, from my personal experience, I can say that I find it rather discouraging, and my colleague Jorg Ostrowski made some excellent recommendations on this point, because the fact that we live in one of the sunniest parts of the North American continent, Calgary falls within the sunniest spot -- Calgary is one of the highest solar radiation within the North American continent, and yet there are very few buildings I see here designed to trap this valuable energy and thereby reduce the energy use.

I believe that all new buildings of any size -- of any significant size designed now should be a smart solar house, by which I mean a house that uses passive and active solar energy and is also controlled optimally by a microprocessor.

Now, adding a microprocessor or smart wiring at the construction stage does not add very much to the cost of a building, but if you try to retrofit an existing building later with smart wiring or microprocessor control, that becomes quite a clumsy affair. So why don't the architects and the developers think in those terms, that every building should use -- every building should be facing the right direction, should have the windows -- and there has been vast progress been made in these fields to make a building very, very low energy house. Now, we -- each one of us generate 75 watts, and if you have a house where you consider all the heat losses, heat gain and heat losses right at the design stage, you will neither have to air condition it and not to spend too much money on heating it.

When the municipal buildings in Calgary were rising, these buildings with acres of glass and roof area, one day it struck me that these buildings would be ideal to have a demonstration project of solar energy in Calgary. So I rang up the architect of the -- particularly, I think, the City Hall, the new modern City Hall, and I somehow traced him, and then -- he was very busy, of course, very difficult to get ahold of, and I said that "Are you using any solar energy in your building, are you utilizing any or have you designed anything?" And he said no. So I asked him why, and he said "I did not think about it, it never struck me".

Now, this business of never striking is something that we must change. We live in one of the sunniest parts of the world, although in spite of the winter. We are so effectively shielded from the winter because we have so many things, chinook, the sun and so on; yet we do not make much use of it, as far as I can see. And we do not think of this vital resource we have when we design our houses. And this sort of thing must come into our thought process.

The same approach to energy conservation and efficiency should permeate into our industries. Now, in America, I have been involved in co-generation design for some time, and in America, most of the large industries who generate their own electric power go entirely for co-generation, and the government has got various tax benefits and so on which makes it worthwhile. So that not a single calorie, not a hundred calories of heat is wasted.

See, you make your electricity, and then the excess heat from your circulating water or whatever, you use heat exchangers, extract that heat and use it for industrial purposes. This is the way it should go. And, in fact, in several countries, they are now finding it possible to make larger factories and so on because they can save so much money on utility bills, and utility bills are much higher there than here.

Dr. Robin Basu
U of C Dept. of Physics
Wednesday, December 5th, 1990

Today there are available more or less efficient version of equipment, starting from domestic appliances, cars, to electric motors. I think if we are really concerned about the quality of air, we should never buy anything which is less energy efficient than it ought to be. So I don't think that we want to see less efficient refrigerators, washing machines, et cetera, disapper from the market. We want to use electric motors which are of the highest efficiency.

I was so surprised that -- I was involved in a utility design exercise here not so long ago, and I made a very strong point about using all the electric motors of the highest efficiency, but the utility wasn't interested because they could save a few dollars by using the less efficient electric motors, and this kind of thinking I think has to go if we are concerned about the quality of air.

In the coming century, gasoline is going to be replaced as a vehicle fuel, and my bet is on solar hydrogen. And my bet is on solar hydrogen because it is a clean fuel and is the only closed-cycle fuel. All the fossil fuels are open-cycle fuel, which means that, if you burn it, you change it into something else and it cannot be changed back again. And solar hydrogen is -- if you burn it, you get water, so it emits a closed cycle, and it's a clean fuel which does not change the environment and emits very little pollutants. It's -- just a little nitrous oxide, no carbon dioxide emissions at all.

Now, already the latest report from World Research Institute shows that it is comparable to or better than methanol in cars, and the disadvantage of methanol is that you have to have the acreage devoted to making these things, the initial core or whatever you make, before you make it methanol. And solar hydrogen is made by modern -- you see, the cost of solar hydrogen has gone done because the solar modules of today are made from very thin amorphous silicone, which is basically made from ordinary sand, so you take ordinary sand and you take ordinary water and you create hydrogen. That's your fuel.

And this fuel, again, unfortunately, because in Alberta we have cheap energy and our basic economy is connected -- is linked to production of oil and gas, there seems to be a kind of very marked lack of interest in solar hydrogen, so much so that, when the last calls came for research projects on hydrogen, our attempt to get even a pilot plant investigation in solar hydrogen did not succeed because there is absolutely no intention, it seems, from the decision-making bodies to look at solar hydrogen at the moment. But this solar hydrogen I am willing to predict is going to be the transportation fuel in the States very soon.

In the World Research Institute of Washington's report, they have shown by calculation that by just dedicating less than 1 percent of the land area of United States, they can replace all the fossil fuels, all the gasoline that's being used for transportation. This has caused quite a bit of excitement, and people are looking into this, and the advantage of this is that you can make hydrogen not -- you don't need a fertile land, you don't need anything, you can make it in the middle of the desert. And the biggest experiment of this is going on in Saudi Arabia, because Saudi Arabia is interested in using as little oil -- selling as little oil as possible, keeping most of it in the ground for generations and going into other things, diversifying, and their plan is now to make enough hydrogen to pump -- to send it by tankers or pipes to other countries.

Now, that's the way to go. Our renewable -- non-renewable resources in Canada should not be burned off. They should be retained and used for better purposes. Coal can be used for drugs and various other things. You should not burn coal if we can find something else. Same goes for oil and gases.

We should think of the future

generations who, when they come up -- like today in Newcastle, there is no coal. You remember the old saying "carrying coal to Newcastle"? And now anywhere within 50 miles radius of Newcastle, there's not an ounce of coal. I can tell you. I was there. And I believe that all this is related, and we have the will to stop this deterioration process. And thank you for giving me your ear.

MODERATOR MILLARD: Thank you, Doctor.

Dr. Damgaard?

DR. NEILS DAMGAARD: I don't know if that's a signal that we take too much time up here or whatever, but if the lights completely go out -- or are you just being efficient? Thank you very much.

I'm President of the Alberta Fish & Game Association. We have over 15,000 members across the province today. I'm also a family physician here in Calgary.

Now, our association was established in 1909. We represent over 11,000 households in this province, from over 120 clubs and over 100 communities throughout the province. Many may ask "why is Fish & Game involved in the Clean Air Strategy?" Simply because clean air and water with a relative lack of pollutants is so vital to natural ecosystems. The Association has prepared a brief, and

I'm quoting from that brief. I won't read it extensively.

First of all, I want to talk about carbon dioxide emissions. And here comes my water. I'm also under the labouring effect of the latest B-Yamigata flu that we have in town. I also had a delivery this morning bringing another baby into the world at 2 o'clock, so if your doctor passes out tonight, there is a reason for it.

Carbon dioxide emissions and the greenhouse effect: I think there's no question in my mind and certainly in our Association's mind that the scientific community says there is a greenhouse effect, it's coming, and to debate it one way or the other is rather like debating how many fairies can dance on the head of a pin. It doesn't matter, it's coming, as simple as that.

In Alberta, the major impacts that we see will likely be on agriculture, forestry and wildlife. We'll see more droughts, we'll see more crop diseases and more pests and more wind erosion. Less water; that's quite obvious. There will be a greater rate of evaporation due to the production of greater heat units.

Now, wildlife really gets affected by that sort of thing. We lose the wetlands and we lose other ecosystems. And unless action is really taken to reduce this buildup of greenhouse gases, we are simply wasting our money, we're wasting our time, and we're wasting our effort in trying to develop wetland habitat and projects and other habitat-related projects. It's quite simple: There won't be any wetlands or many of these other habitats in the prairie provinces if we don't curb this effect.

Now, it's so readily apparent that wildlife will suffer if the rate of warming is not reduced, and that rate of suffering is a loss of 50 percent of the species on the face of this earth. That's just an unheard-of situation.

The one source -- and I mentioned CO/2 or -- is really the major source as a greenhouse gas. Our sources say 50 percent of the warming trend is from CO/2 production, which comes from the burning of fossil fuels.

Now, early in '89, our Association did pass a resolution that was developed in 1988, and you have probably heard these resolutions all over the place, that the Government of Alberta established a goal to reduce CO/2 emissions by at least 20 percent of '88 levels by the year 2005. Now, I have mentioned -- or have heard mentioned 2002 before, but we gave them an extra three years. Now, we believe that's realistic, when you think about it. It does require that you and I and perhaps everybody in the world might have to accept a little bit less. But it's the old story, you know, where you pay me now or you pay me later and, believe me, you can't afford to pay me later.

Now, policy options you can look at for this 20 percent reduction include energy conservation and improved efficiency of energy utilization. Now, you've all heard this. It's already been brought up. I'm not going to spend a lot of time on it. But, to us, it looks very simple: Increasing prices of non-renewable energy is the most efficient method of stimulating energy conservation and improved efficiency. And you can just see how many people were rushing out to buy those 50-mile-per-gallon cars out there these days when they had to pay 65 cents for a litre of gas.

Now, you could also do that with increasing floor prices for Canadian oil, and there may be some constraints to this due to the Free Trade Agreement, among others. A carbon tax is certainly a possibility that we can accept, provided that carbon tax is used appropriately, and that is stimulating renewable energy sources, helping to reduce emissions of other sources, and starting a high technology of energy conservation and exporting that technology so that we recover that in the future.

Certainly renewable energy is a way to -- we've got to look at that. And Alberta is blessed. We have sunshine like no other parts in North America almost. I should know. We also have the highest rate of skin cancer in Canada. But that's -- that's another point. Just as economic dis-incentives are the most efficient method of discouraging non-renewable energy consumption, economic incentives could be used to encourage use of renewable energy. In Canada and particularly Alberta, we have that opportunity to become a world leader in renewable energy technology. And our previous speaker who alluded to that, I would like to thank him. That was an excellent presentation.

Three, we can reduce emissions; there's no question about that. And we can perhaps use some of those CO/2 emissions for other situations.

And, fourthly, international. Yes, of course, if we don't all get together on this -- we're no longer Alberta, we're part of the global village, and if we all can't get together on this, it will all be for not. But I don't think Alberta should sit back and wait for the rest of the world to do their thing and then we'll get on board. And I think governments and particularly the Alberta Government simply cannot sit and debate the need for an overall CO/2 reduction.

The preponderance of scientific thinking is overwhelmingly clear: CO/2 emissions must be reduced. This might require some fundamental changes in political thought and processes in this province, but I know our Association would certainly be prepared to support a government with the conviction and courage to institute those needed changes.

And while I look at that -- I bring that up: There's our Honourable Energy Minister for the Province of Alberta. His department is partly responsible for bringing these hearings about. Appropriate title, "The Greenhouse Game". This is our Energy Minister saying things about the Federal Energy Minister like "De Cotret's move is extremely troublesome and a breach of faith". Does it sound like our Energy Minister's already made up his mind about these hearings and you and I are wasting our time? I don't know, but I think it's irresponsible of a politician to be thinking in those terms, and maybe some of you can ask him that when you see him again. I know I certainly will.

Before I lose my voice here, nitrogen oxides and volatile organic compounds is my next subject. I'm not going to spend a great deal of time on that hear. It's in the brief. And I didn't bring copies for everybody. It costs energy to produce copies, even though my copies happen to be made on hundred-percent recycled, hundred-percent unbleached paper. But, certainly, we feel there should be an emphasis on integrated solutions to air pollution problems not only involving CO/2 but certainly the NOx's and the VOC's and the sulphur dioxides and other oxides of sulphur.

Now, here again comes this political thing into the situation. We were at a technical briefing just last August with the feds, and they indicated they're taking a market-driven approach to energy efficiency and diversification. Now, we questioned that a little further: "Would you take that kind of approach to energy development?" No, no, they say. They say that they are prepared to not use that approach for fossil fuel development because of the need for regional development and jobs. That's all right. But the feds were quite prepared to subsidize destruction of the environment but not protection of the environment.

And while we're on it, here we have Mr. De Cotret, and the best he can do is "maybe we can stablize CO/2 production in this country by the year 2000". Two years ago, he said we'll go for the 20 percent reduction. And then our Federal Environment

Minister is running around to all the provinces making deals, you know, hear a deal, there a deal, everywhere a deal, but when a reporter talks to him in Ottawa, he changes his mind. And that's not the kind of rapport we need from our politicians if we're going to solve this problem. I see a definite problem with the feds, I see a definite problem with our provincial governments, and that's not any different than here in Alberta.

Sour gas emissions is my next subject, or, more appropriately, acid deposition. There's no question about the amount of deposition -- or acid deposition we have in Alberta. The figures we have, the total average sulphate deposition, wet plus dry, in Alberta is 26.4 kilograms per hectare per year. The average -- or the target level established to protect moderately sensitive areas has been set at 30 kilograms per hectare per year, so we're approaching, you know, a danger point here on moderately sensitive areas in the province. In fact, in sensitive areas, the target is only 12 kilograms per hectare per year.

As we see it or what -- and these figures are readily available. 22 percent of the soils in Alberta are highly sensitive to acid deposition, 30 percent are moderately sensitive, so that we're already putting a third of our province at risk from acid deposition. Between 5 and 10 percent of our lakes are extremely sensitive to acid deposition. We've already got problems showing up.

Now, the problems of acid deposition are certainly well known. And I think we can do something about it. But perhaps not as well known as that people get sick from it too. Now, people in Alberta who live near sour gas plants, they feel that their health is adversely affected. And it's not only near Pincher Creek; it's Grande Prairie, Sundry, Lacombe, Mayerthorpe, Rimbey, St. Albert, just to name a few.

Now, we did a study, partial study, on the results of -- or what acid deposition can do to human health, and that was the Southwestern Alberta Diagnostic Review done by Spitzer. Now, from that study, we could identify four medical problems that kept cropping up when it came to sulphur deposition, at least, and that was: Chronic bronchitis, that has to do with your lungs; dermatitis has to do with your skins; neurological problems, including deafness, and back problems with neurological signs; and, fourthly, hypertension or high blood pressure. Now, Spitzer himself pointed out that the hypertension problem should be looked at much more closely, and that still hasn't even begun to be looked at. Certainly, fish and wildlife can be affected by sour gas emissions and acid deposition.

The solutions are obvious, and that is we must have a reduction in sulphur emissions. Surely, best available technology -- and that's been our position -- must be used on all sulphur emissions, even small producers. Provisions must be put in place to allow companies to at least retrofit plants to meet newer and tougher emission standards. And that's where other -- for example, that's where a carbon tax could be helpful, on that sort of thing.

I bring up a small point: Heavy metal emissions. I haven't heard anybody else bring it up. I heard that somebody brought up Suncor and Syncrude, which are our two biggest point-sources of sulphur pollution in the province. They're also our two biggest sources of heavy metal emissions. And these are a real host of funny names that you may see occasionally on an atomic chart, and I haven't seen any since I was in university. But they're showing up in the mosses, they're showing up in the lichens, and they're increasing. Fortunately, one of the plants has put in a vanadium extraction unit, but there's still a dozen other heavy metals to be looking at.

Indoor air quality: The previous speaker mentioned indoor air quality, and I agree. The air that we have indoors is infinitely worse than when we go outdoors, and people don't realize that. Your very own homes are probably even worse than your office buildings, and we don't have a policy to address that in this province or this country, and that's a sad fact of life, because we, as front-line physicians, we've got to treat it, and it can show up in a variety of ways. There's no question that worker productivity and general health is enhanced when they are treated to good quality, clean and fresh air. And that's the positive side effect or positive benefit of getting a good, clean indoor air policy.

I'm going to finally bring up some of the human health dimensions, because as a family physician, I just can't sit back and say ignore this, ignore that. To no one's surprise, as I mentioned, good, clean fresh air is good for our health. That's logical. It's also logical to assume that polluted, unclean and stale air is unhealthy. But how is it unhealthy?

I bring up a point called reactive airways disease. Reactive airways disease is much like asthma, it has much the same effect, except when you try and treat it. It doesn't treat the same way. And, as a result, we're having an awful lot of people dying in this country from reactive airways disease. In fact, it's prompted the Medical Examiner's office here in Alberta to do a wide-ranging prospective study on what the hell's going on here, because young people shouldn't be dying from simple asthma-like conditions, but they are, and it's mainly young people.

Now, modern medical evidence seems to suggest -- and it really suggests quite strongly -- that airborne pollutants are the major cause or the major contributing factor to reactive airways disease. And if you haven't seen asthma, it's that wheezing, they turn blue and the whole thing. However, when your heart stops when you're in that state, you can't get oxygen into the body, and no matter what you do, you can't bring these people back once their heart stops, and that's the sad point about it.

Reactive airways disease is serious, and it's prevalence is so rampantly increasing, especially in larger cities -- and Calgary is a large city; so is Edmonton -- that we've even had periods in Canada we don't have enough drugs to treat this disease. We've had rationing of some of the drugs, and not many people know that. And we don't want to scare everybody, but it is serious, so the extra coughing you may hear around the office may in fact be a manifestation of this sort of situation.

Now, there are lots of other situations that health effects show up. We mentioned the Spitzer study, and there has been collaboration now from a study in Nova Scotia where they studied people related to low-level sulphur emissions from a pulp mill, and they found the same thing, people do get sick from this sort of thing, and it's not healthy.

Now, the compromising of human health is surely an indicator we have problems with the air we breathe. You know, these sick people or the people that get ill from the air they breathe, they're not conspiring against polluters, they're merely passively reacting to it. The time is long overdue for a clean air strategy that takes into account human health effects.

Now, I appreciate the opportunity for our Association to provide input to these hearings. We certainly look forward to a continued dialogue and follow-up, and as I said, the brief I've sort of quoted from tonight has been presented to our Moderator. And I think he's got a big hook back there, but -- it's in draft form yet, and we will clean it up a little bit and give it in final form in due course. I thank you very much.

MODERATOR MILLARD: Thank you, Doctor.
Alderman Sharon Fisk?

ALDERMAN SHARON FISK: Thank you. I'm very pleased to be here this evening to be a part of these presentations. I'm here as Deputy Mayor, and I apologize I wasn't able to be here for some of the first speakers, and if I duplicate or repeat what has been said earlier, I apologize for that, but I have a prepared script and I could not stray very far from that as it is the City's position.

The City of Calgary is pleased to present our views on the need for improved air quality in this city and on the Clean Air Strategy for Alberta. The preparation of the Clean Air Strategy is a noteworthy accomplishment, and Mayor Al Duerr and other Members of Council would like to compliment the Government of Alberta for taking this initiative.

Calgary City Council is seriously concerned about the declining air quality within this province, particularly within the city of Calgary. We are very pleased that the Provincial Government has undertaken these public meetings. City Council agrees in principle that energy-related exhaust emissions, whether from automobiles or industrial processing, pose a potential environmental health risk for Albertans, and we likewise agree that the issue of clean air is a complex, scientific and global matter that is intricately interwoven into all aspects of our society.

One doesn't have to look very far in this city to realize that the foundation of our economy is the energy industry; yet we also recognize that the air we breathe and its effects on our health must be of greater concern and priority to us as a society than the economic gains achieved by continuing to consume our fossil fuel resources on the scale that we do to meet ever-increasing energy demands.

We must weigh human health and environmental considerations in relation to economic considerations. Our society is quickly realizing that our small and rather fragile world can withstand only a certain amount of sustained environmental abuse. I would suggest, Mr. Chairman, that the time for Albertans and Calgarians to act is now.

The City of Calgary does support the purpose and objectives of the Clean Air Strategy for Alberta, and we want to work as a partner with the Provincial Government to implement it. We endorse in principle the national and international commitments made for emission standards of carbon dioxide, sulphur dioxide, nitrogen oxides, volatile organic compounds and chlorofluorocarbons.

We fully recognize that consumers and the energy industry in this province, as the largest producer of fossil fuel energy in Canada, will be impacted to a significant degree. The energy industry and the consumers of these resources must recognize the impact we are making. Maybe we must work harder at developing better technology so that emissions will be cleaner and we will see an improvement in the air that we breathe. Yes, Alberta is only one small part of the world's air pollution problem, but if a start is not made somewhere, then how do we solve our world-scale problems?

This public meeting is an opportunity to not only promote the Clean Air Strategy for Alberta but also for the City of Calgary to highlight the actions that we as a corporation are undertaking to illustrate that we are serious about our commitment to clean up Calgary's air.

A recent public opinion survey indicates that Calgarians on the whole place a high value on protecting this city's air quality. Council has heard this message and has acted with a number of initiatives to begin the slow process of reducing harmful chemical emissions into our atmosphere.

Several examples of recently-initiated air quality enhancement projects in Calgary are the Air Improvement Resolution, Air Calgary, the program which encourages motorists to leave their vehicles at home one in every ten work days and instead use an alternate form of transportation to work, whether that's car pooling, transit, bicycling, walking, et cetera. The idea is to reduce the number of vehicles on the road.

Calgary Transit is working on improvements to public transit for the purpose of encouraging greater ridership, resulting in fewer vehicles on the road, particularly during the rush hour. Calgary Transit is monitoring alternate energy pilot projects for buses with a view to implementing proven technologies at the earliest practical date.

The City is encouraging consumers and businesses to reduce the use of products containing or manufactured with the use of harmful products, such as CFC's and halons, and to be generally more cautious and responsible with environmental harmful or hazardous gaseous materials, such as carbon dioxide. The City is preparing a bylaw to control CFC/halon storage, handling, venting and accidental escapes, primarily to reduce and regulate the amount of these man-made products entering the atmosphere.

The City encourages technological advances which will reduce vehicle and industrial exhaust emissions and ensures greater health, personal safety and security at locations such as sour gas well heads and technology which will lead to fewer natural and accidental escapes of harmful vapors into the atmosphere.

The City has an energy conservation program for buildings and plants that it operates and expends funding annually to retrofit for energy savings. New facilities are designed with energy conservation in mind.

The City is setting an example by converting an ever-increasing number of its police cars and other light-fleet vehicles to propane operation. The City is also investigating alternative fuels, including natural gas and methanol, for other vehicles in the City's fleets.

Calgary Transit promotes use of the public transit by proclaiming a Transit Awareness Week. The City encourages provincial assistance with transit operating expenditures through increased grants and applaudes the continued provincial support through the grant structure for capital expenditures.

The Transportation Department's Traffic Operations Division operates a traffic signal light progression program to move vehicles through the busy core area much more efficiently.

The City has established an environmental office as a division of the Engineering and Environmental Service Department to coordinate the City's involvement in and to comment on matters relating to the environment, including air quality issues.

These are but a few of the initiatives the City of Calgary is undertaking as a pro-active measure to improve the city's air. The City of Calgary intends to continue to be pro-active in implementing initiatives which will have a positive effect on our air quality in the future.

An impact on the air quality in this province will be felt in time, once residents begin to accept that there is a need to change their business practices, driving and lifestyle habits. The City's part in the Clean Air Strategy for Alberta is minor, at least in a global sense, but on a local scale, we are confident that Calgarians who like a challenge will rise to the occasion.

Calgarians' contribution towards cleaning up the air will be made voluntarily and with only modest adjustments or restructuring to our lifestyles. We will have to voluntarily reduce vehicle usage to essential travel, we will have to control harmful emissions more strictly, and we will need to capitalize on alternate modes of transportation, whether that be public transit, car pooling, walking or cycling. Calgarians must be willing to make concessions and to take charge of our local environmental problems so that our community as a whole will be exposed to fewer air-polluting and atmosphere-altering emissions.

In summary, the Government of Alberta's Clean Air Strategy is a positive move towards setting and meeting fair and reasonable air emission standards set for carbon dioxide, sulphur oxides, nitrogen oxides, volatile organic compounds and methane. Calgarians for the most part acknowledge we have a world-wide air quality crisis and most are prepared to voluntarily make measurable, possibly even significant changes and sacrifices to their lifestyles and to the way they conduct business.

Thank you, Mr. Chairman, for this opportunity to show support for the Clean Air Strategy for Alberta. We have a long ways to go, so let's continue the journey together. Thank you.

MODERATOR MILLARD: Thank you very much.

Herb Jacobsen?

HERB JACOBSEN: Mr. Moderator, ladies and gentlemen, for years I have wanted to say my piece, and I could not pass up the opportunity to gain a podium.

It is said that good stewardship of our natural resources is the rent that we pay for our time here. Recently, the Calgary Herald noted the high cost of proposed environmental programs, and the paper questioned the affordability. We might ask just how much rent can our economy afford to pay? We would suggest that a greater emphasis upon past events could bring a needed balance to our concerns for the environment of the future. Here we would like to recall just a very few past events relative to air quality.

I was raised in the town of Okotoks downwind of the Turner Valley oil and gas field. If we could smell sulphur -- and we often did -- we knew that the wind was blowing from the west. Hell's half-acre was symoblic of this period when an estimated 1 trillion cubic feet of sour gas was burned to atmosphere.

Alberta's first sulphur recovery plant was completed in 1952 at Jumping Pound. Over the past decades through the combined effort of government and industry, there is now almost complete removal of sulphur from produced sour gas. We have experienced a greater than 98 percent improvement over the 1930s and 1940s. Alberta Environment and the Conservation Board, Vern Millard, deserve high marks.

In 1945, at Donora, Pennsylvania, a high-sulphur coal was used as fuel. A smog developed where 20 people died and 43 percent of the population of 14,000 became ill.

By way of contrast, we recall a sign placed beside the Number 2 Highway at Red Deer. The sign read "The cleanest sky in the world is above you thanks to our heating with natural gas". Alberta cities have grown since this time.

Dr. J.J. McKetta (phonetic) of the National Academy of Science has reported that all of man's pollution during his time on earth does not equal the emission of noxious gases from just three volcanoes, Java in 1883, Alaska in 1912, and Iceland in 1947. He suggests that man contributes to atmosphere 270 million tons of carbon monoxide largely through the use of the automobile.

Since the ratio of automobiles in the northern and southern hemispheres is nine to one, it might be expected that the northern hemisphere would have much higher levels of carbon monoxide. However, measurements show no difference in atmospheric carbon monoxide. In fact, there are higher levels of carbon monoxide found over the Atlantic and Pacific Oceans than over land.

Recently when driving in Washington between Pasco and Spokane, we noticed a small town in the distance. A welcome sign appeared at the side of the highway, and the sign read, "Lind, Washington. Come on in. Mt. St. Helens did." Such a positive attitude towards an environmental problem was exciting to see. On May 18th, 1980, a plume rose 22 kilometers into the air carrying 500 million tons of ash across the country. However, as reported in the Calgary

Herald on the tenth anniversary of the eruption, nature does heal and this healing is underway.

On the subject of safety, the Science Council of Canada prepared in 1977 a report on policies and poisons, Report Number 28. Here a new definition of safety was presented: Safety is not measured; risks are measured. Only when those risks are weighed on the balance of social values can safety be judged.

A thing is safe if its attendant risks are judged to be acceptable. Determining safety involves two extremely different kinds of activity: One is scientific, a measurement of the probability and severity of harm. The other is political, judging the acceptability of risk.

The report also notes that the public is willing to accept voluntary risks roughly 1,000 times greater than those represented by involuntary exposure. Having worked for some years in the measurement of air quality, I am aware of some of the analysis data that has been filed with Alberta Environment over the past 30 years. Basically, the analyses were made to learn whether or not the acceptable standards of air quality were met.

Many thousands of analyses results are on record, sampling being done in all sections of Alberta. Having used a fraction of the data ourselves to prepare a correlation, we suggest that the data on file could be used to a much greater advantage: By relating the old to the more recent data, we could be advised of a significant trend in air quality for a specific location.

We were impressed by a recent newspaper heading in The Herald October 7th. This read "Saving Yesterday for Tomorrow". Having regard for the past, we might better anticipate the environment of the future.

In conclusion, we would affirm the need for us to maintain air quality and in so doing pay the rent that is due. The care that we take supplements the potential that creation does have for renewal for bringing to us the springtime that follows winter. Thanks.

MODERATOR MILLARD: Thanks very much.

Well, ladies and gentlemen, that completes the list of submitters for this evening. Is there anyone else that would like to make a statement or make a submission at this point in time? Yes?

HUGH JONES: Mr. Millard, my name is Hugh Jones, just a citizen, retired, and very interested in all of these items. And I listened with great interest to talk about insulation of homes, saving on incandescent lights, but it was very late in the day before anyone mentioned Mr. De Cotret's statement that we were going to attempt as a nation to come back -- he admitted that we would go beyond but -- to come back to 1990 CO/2 emissions levels.

Well, this could mean another National Energy Program type of a consequence for Alberta. It seems to me that this is an overwhelming consequence within the area of this group to understand. If we put in all of the efficiencies someone spoke of in electric lights, there's very little efficiency to be taken in industry. This is in homes; you might save one half of 1 percent of the energy consumption in this province. It's insignificant.

Almost all of the other items that have been spoken of are insignificant by comparison with this vast amount of CO/2 that's given off by our energy industry. People talk about staying at 1990 level, but that leaves us 15 times higher than 4 billion people in this world. The 1 billion of us who are giving this much off may not always be allowed to give that much, never mind the 47 percent increase that you and I and industry in this province had presumed we would do by slightly after 2000.

It would seem to me that this ought to be a predominant area of study, and within the weeks since Mr. De Cotret's statement, I would have inquired if I had been in this group into a dozen or so things, all of which I asked of the people at the open house today and none of the questions could they answer or could they even indicate that they had asked the questions to the people who would have the answers.

For example, what would the saving in CO/2 emission be if we as a province switched to gas for our electric generation? I don't think we would ever want to do that, I don't think the rest of the country would want us to do it, but it would be a good threat when we come to negotiating with the rest of the country.

How much of the CO/2 that's generated there and elsewhere could we inject in various wells, and if we can inject some, how much energy do we lose in doing the injection? In other words, what's the practicality of this?

No one speaks -- and I've been in constant communication with De Cotret to the point where he finally responded and did mention once that carbon can also be absorbed. How much forest would we have to harvest each year -- because a forest simply growing at climax does not absorb carbon, it is only a harvested forest that absorbs carbon -- how much forest would we have to harvest in this province in order to balance out the whole thing? Ontario Hydro say that they can balance it out with -- and I vaguely recall it was something like a couple of townships within the province of Ontario would balance their 12 million tons of coal. It would seem to me that we might be able to balance it here, but at least someone should have inquired into this.

What are the other sources of these gases that we will be required to stop emitting? No one could tell me how much carbon dioxide was emitted by the flaring of natural gas. They couldn't tell me precisely the ways in which carbon dioxide is emitted from the energy projects like the tar sands projects. Maybe there's -- that's one of the places where we could have a significant efficiency as opposed to one of these little dribbles.

Just so many items that occurred to me as a normal citizen we needed to know. It seemed to me that within this group, you should have been burning to know those things.

Well, that was one of the others that I think they should know about: How much carbon dioxide is given off in the forest industry in unnecessary burning of slash? All of that slash could be used as mulch, it would seem to me, and encourage the growth of the new forest, whereas now, in B.C., at least -- I haven't seen the industry burning slash here, but they certainly do in B.C.

And controlled burns in parks and elsewhere in this province must put a vast amount of CO/2 into the air. All of that could be chipped and mulched. I know the Green people in the park would object to being required to do that, and I don't know how much it would save, but these, it seems to me, are things that I would have gotten the first train of the answers, even in that short period since De Cotret's speech, and I wonder if you could suggest to the group that the emphasis might -- should be reconsidered.

MODERATOR MILLARD: We'll take that into consideration.

Any other comments or questions or statements?

PETER PROUDLOCK: Yes. Peter Proudlock speaking again. A couple of things: I was hoping Alderman Fisk was still here, and I'm wondering, if Calgary is supporting the clean air initiative so strongly, why are we as a city raising transit fares to try and discourage ridership? That was one I think the City should be required to provide.

BOB MITCHELL: Excuse me, Sharon is still here, so if you could hold your question, we'll get her back.

PETER PROUDLOCK: Oh, okay, I appreciate it. The other thing I notice on the -- one sheet that has been distributed with the package Inter-relationships Among Environmental Activities in Alberta, the regional sessions started early November and will continue until a little later in December, whereas the interaction and the input or the output of these hearings through to the Canadian Council of Ministers of the Environment occurred mid-November, and I see on this that there really is no continued output there. I'm wondering why the hearings couldn't have been held a little earlier to try and meet with -- so that that output would go along. That's a comment there that perhaps there may be some way of getting the additional output put on.

On the brochures, a couple and one on methane, I note the coal mining emissions of methane -- that's just one we've done work on -- at 35 megatons. The figures we've calculated are 58 megatons. You know, it's a fair bit higher.

The brochure on the greenhouse effect quotes methane as 9 percent of the greenhouse effect, whereas the World Resource Institute has quoted it at 15 percent. Now, these are just some differences, and I'm not qualified to really say why they are. I just thought I would bring them to your attention.

MODERATOR MILLARD: We appreciate that, you doing so.

PETER PROUDLOCK: And I also would like to direct that question to Alderman Fisk when she is back.

MODERATOR MILLARD: Is Alderman Fisk present? Alderman Fisk, there was a question. And why don't you put the question again, please.

PETER PROUDLOCK: Yes, Peter Proudlock. I'm wondering, if Calgary supports the clean air initiative so strongly and we're trying to reduce car usage -- and I get around it by using another vehicle but -- why are we increasing transit fares, which is a dis-incentive to use transit, when public transit is probably the way of reducing auto usage? We should be looking at better service, gaining more ridership to gain income, not raising fares, and that's going to reduce ridership and someone will say, "To heck with it, I'll park downtown". Has that been looked at?

ALDERMAN SHARON FISK: Well, yes, it has, and it still hasn't been approved by Council that that fare will be increased. I don't sit on that committee, so I haven't had my opportunity to debate that, but I will be debating it when it comes before Council. I don't agree with the fares being increased because of that reason, and hopefully we will get some more debate going on it. It's not a fait accompli like you may think it is.

PETER PROUDLOCK: Thank you.

ALDERMAN SHARON FISK: Okay, was that --

MODERATOR MILLARD: Thank you. I appreciate you coming back.

Are there any other comments or questions? I take it -- yes?

ED WOLF: Well, I see it's very late, so I'll be brief in my comments, but -- I'm here not representing any organization, but I would like to call attention to the bulletin of -- Number 28, the Institute of Resources Law recently published. And they analyzed the Oil and Gas Conservation Act and the E.R.C.B. Act. I think one of them at least was promulgated in 1938, revised in 1971.

In a series of conclusions that they reached, the Institute of Resources Law said that in no instance did they feel that the legislation permitted the E.R.C.B. to find any reason to delay any project except where the public interest was defined as developed.

I have written the E.R.C.B. about this, and I feel this is a very serious deterent to the sort of thing we're talking about here this evening. I feel that the E.R.C.B. and the Oil and Gas Conservation Act are in severe need of reform.

I attended the recent N.R.C.B. hearings. I believe I saw Dr. Damgaard there and others. And I came away feeling that whatever was done at the N.R.C.B., the E.R.C.B. will continue in its role of finding that the public interest is solely developed. I've attended hearings of the E.R.C.B. for like 16 to 18 years, and in all of the things that I have dealt with, both for organizations and as an individual, the E.R.C.B. in almost every instance when it had to approved the project or the well in each instance.

This gentleman here mentioned the injection of gases, waste gases, greenhouse gases, into the subsurface of geologic rocks. Many of the rocks in this province are of sufficient voracity and permeability to make that a reasonable cost for industry to bear. In putting away some of these gases, the E.R.C.B. recently approved the Caroline project for Shell, another 4,000 tons a day of CO/2. Some of the other gases I'm not aware of.

But for something like 14 years, I've been urging the E.R.C.B. to consider injection of these gases to Devonian and Mississippian or -- and many areas are certainly capable of taking these gases, and as this gentleman pointed out, we haven't heard the cost deterent for this, but it's certainly worth consideration.

And in the forum over at MacDougall School today, I found that the coal industry is considering doing that, and I feel that, in talking to Shell recently, I said I regard Shell as the largest polluter in the province and perhaps in Canada, and I feel that, until they inform me differently, that that's something that we can easily assume. And I feel that, without a reform of our legislation that permits the agency in charge to consider other measures besides development as the public interest, we will continue to have an ever-increasing amount of this, and this man's suggestion is just excellent, that these industries should be required to fully investigate reasons for not putting these gases into the subsurface and relieving the public of having to breed them and put up with them. Thank you.

MODERATOR MILLARD: Thanks, Mr. Wolf.

Any other comments? Yes?

PHIL LULMAN: Mr. Chairman, my name is Phil Lulman. I'm with TransAlta Utilities. And in response to both these gentlemen's comments on this one instance of gas injection into formations, we've been looking in TransAlta at the possibility of taking carbon dioxide from coal-fired generating plants and injecting it in fact for enhanced oil recovery into formations.

Not being a geologist, I wouldn't comment on which formations could take the gas, but in discussions with the oil industry, and partly responding, sir, to your question of cost, it would cost us today about $3.00 a thousand cubic feet of carbon dioxide to actually extract it from our flue gases, and it can be done.

We would receive for any volume that we could sell approximately 80 cents a thousand cubic feet, and under the provisions of the Public Utilities Board that sets the rates in this province, those essentially would be operating costs that would be returned we think to the customer.

So, in that sense, the economics are not there for putting this gas back into the ground from a thermal generating plant, as we see it, but we are trying to find many ways of both capturing gas and, more importantly, disposing of it, because that is proving to be the major challenge. And I hope that helps you a little bit.

MODERATOR MILLARD: Thanks, Mr. Lulman.

Any other comments or questions?

Well, perhaps we could close the evening, and I want to say thanks very much for everyone coming out, and I think we really should express our appreciation for those that made presentations. I thought they were an excellent group.

This has been by far the best session that we have had since we've been on this exercise, and I really commend those that did make submissions. I thought they were excellent.

Thanks again, and good evening.

(Meeting ended at 10:30 p.m., Wed., December 5th, 1990)

COURT REPORTER'S CERTIFICATE:

I, Louella Wood, CSR(A), Court Reporter, hereby certify that the foregoing pages contain a true and correct transcription of my shorthand notes taken herein, to the best of my knowledge, skill, and ability.

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ORIGINAL

CLEAN AIR STRATEGY FOR ALBERTA

Transcript of Proceedings

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Regional Meeting

Held at Red Deer, Alberta, on
Thursday, December 6th, 1990

* *

Appearances:

Vern Millard -	Moderator
Susie Washington - and Cheryl Bradley	Western Environmental and Social Trends
Louella Wood, CSR(A)	Court Reporter

Transcript of Proceedings

(Meeting commenced at 7:00 p.m., Thursday, December 6th, 1990)

MODERATOR MILLARD: Could we commence the evening, please.

Let me say welcome to the boys and girls and ladies and gentlemen that are here tonight, welcome on behalf of the Clean Air Strategy for Alberta. It's nice to see such an invigorating group. We've been meeting around the province in various locations. This is about the eighth -- seventh, I guess, because we got snowed out at Pincher and we're heading back there next week, but this is by far the liveliest and the best-attended. So thanks very much for coming out.

The program that we have for this evening is I've been asked to make a few comments. And, incidentally, my name is Vern Millard. I've been asked to moderate these regional meetings, and I've been asked to make a few introductory comments, and then we have some presentations, at this point in time, three, but there may well be more as we go along in the evening. And, depending on how the evening goes, we may have some dialogue, but it's kind of an easy, casual kind of arrangement so that it's not too stereotyped and lots of flexibility in it.

First of all, let me make some

introductory remarks setting the stage for the discussions that we're going to have this evening. I'm going to move over to the screen, because I have such bad eyesight I can't see very well.

Well, let's start with what is the Clean Air Strategy? And I think the first point we start off with is the recognition that our planet is threatened by man-made emissions. There's a growing consensus in the scientific community that emissions must be reduced in order to protect the environment and protect the planet. And the Clean Air Strategy is designed to encourage public discussion, to get people like yourselves interested in the subject and to explore the various avenues of it.

The Clean Air Strategy will identify the most important issues, it will develop practical approaches for reducing emissions, and it will recommend policies and programs to the Government. And out of all of that will develop a strategy for Alberta.

The Clean Air Strategy has four main features. The first -- or four main steps. The first step occurred last September when representatives of various interest groups got together and reviewed the problems, identified the key issues and options, and then went on from there to arrange for and plan for a reduction in emissions and the development of a strategy.

The second stage of the program is what we're engaged in tonight. It's called regional sessions. There are eight of them scheduled for around the province. As I said before, seven have been held, and one remains after this evening. And, in those sessions, the public is invited to participate, ask questions, present their views and recommend options that can be used by -- in developing a strategy for the province.

The third stage is a summary workshop, which will occur next spring, at which time the views that were expressed at the regional meetings and other developments will come forward to that workshop, and the intent is to develop out of it a more-or-less finished strategy, which then goes into the fourth stage of presenting a specific set of recommendations to the Government.

Well, what are the major problems related to air and clean air in particular? As I said before, continuing research by scientists indicates that we have some serious problems. For example, in November of this year at a Geneva conference, some 700 scientists reviewed and assessed the problem of global warming.

There are really three primary problem areas. The first one is that very global warming that I was referring to, sometimes called the greenhouse effect. It is caused by carbon dioxide and other emissions into the atmosphere. The gases trap energy radiated from the earth, and this results in an increase in temperatures for the province. The emissions occur in both the production and use of fossil fuels.

This is a sketch of how this effect works. The earth is shown by this semi-circle, and the heat from the sun radiates out from the earth, and some of it is reflected back to the earth, and when this gas mixture builds up, more is reflected and, hence, you have the increase in temperature.

The second issue is acid deposition or frequently called acid rain. There's been a good deal of publicity about this over the last decade or so. We've heard about acid rain in Eastern Canada and Eastern United States. It's caused by sulphur oxides, emissions of sulphur oxide and nitrogen oxides. The sulphur oxides come from the processing of fossil fuels. I'm sure you've heard of sour gas plants and the SO/2 emissions that emanate from them. And nitrogen oxides occur from industrial and consumer operations. For example, the use we make each day of our automobiles contributes to the buildup of nitrogen oxides in the atmosphere.

The third problem is smog. That isn't as evident here in Western Canada as in other areas. I suppose we mostly hear about it in relation to California, Los Angeles, but it occurs in Eastern Canada. It occurs, actually, in the Fraser Valley area of British Columbia, and, indeed, in Alberta, Edmonton and Calgary have days when we really have a smog effect.

Well, what is being done about these problems? First of all, there have been many discussions taking place on an international basis. There are national and international research programs that are going on, and they have resulted in some agreements that impact on these particular problems.

For example, there was an agreement through the U.N. in 1985 with respect to the curtailment of sulphur dioxide emissions. In 1988, there was an agreement on nitrogen dioxide. And, currently, the restriction of carbon dioxide is also underway, and you've probably seen in the press the agreement that Canada signed that would limit the carbon dioxide emissions in Canada in the year 2000 to the same level as in 1990.

How does Alberta fit into this total picture? First of all, Alberta is a major producer of energy and, in particular, fossil fuels. We account for 83 percent of the gas that's produced in

Canada. Alberta accounts for 80 percent of the oil that's produced in Canada and about 44 percent of the coal.

Alberta's share of emissions is substantially higher than our per capita or our share in population. Sulphur dioxide is 15 percent of the total Canadian emissions. And our population is roughly about 10 percent. Nitrogen dioxide is 23 percent, and carbon dioxide 22 percent. So Alberta has the highest per capita emissions of these three gases.

However, we have to remember that Alberta is an energy-producing province and 75 percent of its oil and gas is actually sold in markets outside of the province. So one can argue that the higher per capita emissions in Alberta are partly caused by the fact that we do produce energy and supply energy to other parts of Canada and into the United States. Canada's share of the world's CO/2 emissions is 2 percent, so Canada -- or Alberta's is roughly half of 1 percent of the world's emissions.

Fossil fuels, as we all know, are particularly important to the province from an economic point of view. The total value in 1989 of production was about $16 billion. The payment in royalties was about $2.4 billion, which is about 24 percent of the provincial revenues. So it really is a key factor. In addition, there are something like 250,000 direct and indirect jobs related to the energy industry.

I think it's important that we recognize that we're all involved in this problem together. It isn't one of these situations where we can blame everyone else or some other people. If we just look at CO/2 and NOx emissions, we find that they're roughly split about one-third through the energy industry, as I was describing before, producing energy to serve a variety of markets, mostly outside of the province, one-third for other industry and one-third by the public or consumers like you and I.

A question that always comes up in these kinds of discussions is what do we really mean by "clean air"? Traditionally, I think it's fair to say that we have defined "clean air" as being air that doesn't have sufficient contaminants that it affects human health or vegetation or animal life. And if we omit that test, we probably say we have clean air.

But the unfortunate part or the deficiency in that definition is that it doesn't make allowance for the future. If we think in terms of the buildup of gases in the atmosphere, we might have clean air in Alberta today, but the emissions that take place can cause future problems, and when you look at the long-term aspects, that may not be what we would really classify as clean air. So we must still reduce emissions to avoid the long-term effects of global warming.

The question comes up as to how can we reduce emissions? And I think it's fair to say that there are really only four main alternatives:

One, we can produce less energy. If we stopped producing gas in the province or oil or oil sands, clearly, we would significantly reduce the emissions that are associated with it.

We can use less energy, all of us. We can drive less, we can heat our homes to a lower temperature, et cetera, that kind of thing.

Or we can use energy more efficiently. We can insulate our homes in a manner that we still maintain the same temperature but we don't use as much energy to achieve that temperature.

Or we can shift to alternate and non-polluting energy sources, such as the sun, wind energy, et cetera.

How can we as individuals reduce emissions? And that's really the -- part of the purpose of these meetings, these regional meetings. We want your suggestions. We need to know what kinds of options you would select in terms of achieving that particular goal.

I think it's clear that education is an issue with respect to this kind of problem. We have met in seven different communities, and frequently the turnout has been very, very small, two or three people in some instances, which to me suggests that there really isn't a great awareness of the issue. So education is an important feature.

Another issue is how do we become convinced individually that we must change our lifestyles in order to reduce emissions?

And, finally, we can consider what kind of policies and programs are required for an effective clean air strategy. Again, this is very much the focus of these regional meetings, and we want your suggestions.

Some possible developments or programs that might be successful are: We could have new standards that would be developed that would apply to a variety of operations, plant operations, consumer product and so on; we could limit total emissions in a particular area; we could provide incentives to users of energy to develop new technology; we could change current financial incentives that tend to encourage the use of energy; and, of course, we undoubtedly need to carry on with research and probably expand that.

Well, that list is far from

complete. It's not intended to be a definitive list at all. It's really just to provide some ideas.

And now what I would like to do is to call upon people who have indicated a desire to make a presentation, and we'll do that right away, and then we'll proceed and see if there are other people that want to make an impromptu presentation.

The first one is from the Joseph Welsh School.

STUDENTS: We are all students from Joseph Welsh School, and we will go on to other schools near and far. These are some of the things we have done in our club these past four weeks: We have visited a greenhouse, experimented with ultraviolet light and tried to see what it would be like to live in a place without smog.

We have also talked about car pooling, recycling and energy conservation as ways to improve air quality.

We have been working on this project for four weeks during our lunch hours and after school. We have learned a lot, but we think we still need to know more.

What we will show you tonight are mini-presentations about things we have learned and are talking about.

Joseph Welsh School Students
Various Skits
Thursday, December 6th, 1990

We would like to present a short skit about recycling. We feel that recycling is a good option for reducing garbage and using materials over and over again. Our play is convincing others to recycle.

It is a Saturday morning, and the Reese and Henderson family are taking out their garbage. Let's take a look at the families.

"I'll drop you off at the bottle depot; I'll take the papers."

"And I guess I'll take the garbage."

Let's take a look at the other family.

"Come you, on two, it's time to take out the garbage."

"It's not my turn to take out the garbage. I took it out last week."

"No, you didn't."

"Yes, I did."

"No, you didn't."

"Stop fighting. You're both going to take it out."

"Now look what you did."

"It's not my fault. It smells and it's heavy."

"Stop complaining."

"Oh, good morning, how are you today?"

"Oh, it's a terrible day. The kids are fighting. I don't have time to do anything. It's even hard enough trying to take out the garbage."

"Well, why don't you recycle it? It will cut down on your garbage a lot."

"Recycle? I don't have the time. And, besides, I need somebody to take care of the kids."

"Well, why don't you come over for coffee and we'll show you how our family does it."

"You can get money for it."

"Oh, boy, we get money and treats. Please, mom, please can we?"

"I guess so."

"Thank you."

"This is where we keep our bottles and cans, this is where we keep our paper, this is our compost, and this is for the extra garbage."

"All you need is two garbage cans, a box and an ice cream pail."

"Please, Mom, can we?"

"I would recycle, but I don't have the time."

"Well, I guess I could take your cans and bottles if you have them all ready."

"That doesn't sound fair. You guys are doing all the work."

Well, then, I guess I could take it one week and you could take it the next."

"Well, yeah, but I need somebody to take care of the kids."

"Well, the kids could come over and play and I'm pretty sure they would have a lot of fun."

"We could even play Barbies."

"Oh, boy, we can play Barbies. Please, Mom, can we?"

"I guess we could try it out, as long as you two are responsible for it."

"We promise, we'll be responsible."

"Okay, I guess so. Let's go in and get ready, okay?"

"Let's take our stuff down to the centre. Bye."

Our message is to recycle cans and bottles and help preserve our trees and environment. Another big hope is that Red Deer gets the Blue Box program. We did not do this presentation to convince our parents to give us bigger allowances for recycling but because we are concerned about the environment.

Thank you.

MODERATOR MILLARD: Well, that was excellent. Thanks very much.

STUDENTS: There's more.

Here we are in the Speedy house. It is a typical morning and Isobel is in the bathroom getting ready for school.

"Oh, it's so hard to get up on these cold mornings. I'll turn on the shower and get it nice and warm. Meanwhile, I'll turn on the tap to brush my teeth. Now, where's the toothbrush and the toothpaste? It must be here somewhere. Oh, here it is.

That shower sure is heating up this bathroom. It's getting quite nice in here.

Oh, this feels good. I could stay in here for an hour. Hey, it's getting cold, and I've only been in it for half an hour and all the hot water is gone.

Now, where is my hair dryer? Boy, it takes a long time to dry my hair."

Meanwhile, Isobel's mother is in the kitchen trying to get her husband and daughter off to work and school.

"Boy, these mornings sure are hectic. Isobel needs her blouse for school. I'll throw it in the washing machine so it will be ready by the time she's ready to leave.

Out of spoons again. Well, I'll just turn the dishwasher on and clean three for us.

Now for lunch. Let's see, salmon? No, they had that last week. Baloney? But Isobel will complain. Is there anything at the back? What's in this container? Ooh, they won't like that. What about tomato sandwiches, or do I have some meatloaf? There just doesn't seem to be anything interesting in the fridge. Maybe I'll send some money and let them buy lunch."

Mr. Speedy is up and waiting for breakfast. He is in the living room getting the morning news.

"That sun sure is bright this morning. I'll draw the curtains.

Now I can't see. I'll turn on the lights.

Oh, it's cold in here. I'll turn up the heat.

Now, let's see what's on t.v. Not much. Well, I'll read the paper. Maybe something will come on. This ad can go in the garbage and this and this. In fact, all of this can be thrown away.

I had better go check on Mildred and see if she's ready for breakfast."

"These bills came for you, dear. I believe they are the electricity and gas bill."

"Unreal. This is ridiculous. I'll be in the poor house if this keeps up. We have to start cutting back."

After much discussion, we looked in on the Speedy family one week later. Isobel is again in the bathroom.

"I'll start with my teeth, first the toothbrush and the toothpaste and one glass of water. No more running the tap.

Now I'll turn on the shower. Lather fast, rinsed, washed and out in five minutes. I bet that saved water and electricity.

Now for a towel. It's faster than a hair dryer and much cheaper."

Mrs. Speedy is still in the kitchen trying to get her family off to work.

"Out of spoons again. Well, I'll just rinse a couple out in the sink, no use running the dishwasher for so few items.

What is Isobel going to wear? She had better want something that's clean, because I'm not running the washing machine until I have a full load.

Now for lunch. I'll decide what

I want from the fridge before I open it. That way, I'll save electricity."

Mr. Speedy is up now and waiting for breakfast.

"Good morning, good morning. I'll draw the curtains and let the sun in. That way, it will heat up the house and I won't have to turn on the lights.

Now, let's see, should I watch t.v. or read the paper? Maybe t.v. Boy, it's cold in here. I'll go put on a sweater. That way, it's cheaper and I don't have to turn on the furnace and heat up the whole house. Oh, and if I'm leaving, I'll turn off the t.v. No use having it play to an empty room."

This is just the beginning of a many-act play. There are so many things more they could do. The Speedy family has become energy-wise. The important thing is to be aware. We must conserve energy, whether it is to save our natural resources, protect our environment or just to save money.

RICK MOORE: These folks investigated the whole notion of car pooling as a way of reducing NOx's and other things. They would like to tell you a little bit about the pro's and con's of it.

STUDENTS: "This is the good things about car pooling:"

"Number 1, it saves fuel and money."

"Number 2, less pollution equals better health."

"Number 3, slows down global warming."

"Number 4, gets family and friends together."

"Number 5, reduce wear and tear on vehicles."

"Number 6, saves natural resources."

"And number 7, you'll have a warm car on a cold day."

RICK MOORE: There are some downsides, though.

STUDENTS: "These are the bad things of car pooling."

"Number 1, inconvenient to organize."

"Number 2, you do it for somebody else."

"Number 3, if the vehicle breaks down, everyone is involved."

"Number 4, you generally have to be ready to leave earlier."

"Number 5, more kids, more messy

car."

"And number 6, if one person is late, everybody is late."

RICK MOORE: We'll just need one second. We would like to set up one more prop here, and they would like to do a little play that will reinforce these points here for you.

STUDENTS: "Hey, Sabrina, I heard your car died."

"Yeah, we can't get parts until Wednesday."

"Well, how are you getting to school tomorrow?"

"You can car pool with us."

"What's car pooling?"

"Sounds like a pretty stupid idea."

"That's for sure. What's car pooling anyway?"

"Car pooling is when a parent picks up a few kids on the block."

"New Kids on the Block!! Ooh!!"

"I didn't say New Kids on the Block. I said a few kids on the block."

"What's so good about car pooling?"

"Well, we save fuel and money."

"And less fuel, we have less gases in the air."

"Yeah, and that's better for us."

"We can also slow down global warming and live longer with better health."

"Sounds good to me, but I'm still not convinced."

"Me neither. Sounds like a real inconvenience."

"Well, it may sound like an inconvenience, but it makes less pollution than three or four cars would."

"Yeah, but that also makes less sleep for me. I'll have to get up a half an hour earlier so I don't miss my ride. That will wreck my five-year record for being late for school every day."

"Well, it beats walking, doesn't it?"

"True."

"You know, I just had a thought: Some days I have to swim right after school. Bianca, your mom might want to drive me to the pool, wouldn't she?"

"Probably not. Usually we're too busy to drive other people around."

"Well, car pooling has some problems, doesn't it? But another good thing about it is you get to be with your family and friends more."

"That's important to me."

"Me too."

"I don't know if I'll ever agree, but we should try car pooling out once and see if it can work."

"Yeah."

"Yeah."

"Let's go home. I'm getting chilly."

"Yeah, let's go home and tell our parents. They need some more education."

"Right."

STUDENTS: Our group has been thinking a lot about things, and this is what we think.

"If we look at the big picture, we're worried about the ozone layer, oxygen and greenhouse gases like carbon dioxide. Trees play a very important part in our environment."

"We have a problem. We are cutting down too many trees, not taking care of them and not replanting enough. We have to do something."

"Some of the things we can do are spread out the cutting."

"Replanting as many trees as we cut down."

"Make people recycle more paper. It takes less energy to recycle paper than to make new paper."

"What would be even better would be to tell people not to use as much paper."

"Everyone needs to know more about this problem and what they can do."

"This is what we think about Christmas trees."

"Tasha, Melissa, Joanne and Donald were chosen to pick a Christmas tree for their class. When they got together, though, they had a problem."

"Let's go buy the class a real tree."

"Yeah, I just love the smell, and it's a real tradition in our family."

"But I don't like real trees. Someone has to cut them down, and I don't think that's right."

"Now we're killing our trees with our environment."

"Oh, yeah, I remember our clean air club where I learned trees put oxygen in our atmosphere."

"And that they take up greenhouse gases like carbon dioxide naturally to protect the ozone layer and to prevent the greenhouse effect."

"You know, it also takes a lot of energy to make artificial trees, and we can't recycle them."

"But they do last a long time."

"Well, remember, you have to take it and put it away after."

"I think it would be okay to cut down trees if nature replanted every one we cut down."

"Oh, we just don't know."

"This is a common argument. There are many good points for both sides. Everyone has a choice that they make, but we need an informed decision. Everyone needs more information."

RICK MOORE: We apologize if you couldn't quite hear the students at the back. Their voices I guess haven't caught up to the rest of their body size yet, but I can assure you that they have learned a great deal from our studies over the last few weeks.

As you see from the presentations, our students are more than interested in the issues that we've been discussing, and while it's obvious that their knowledge is perhaps on a different level than on the presentations you will receive, they nevertheless are learning and involved.

Many of the ideas that come out of this Commission will probably influence their way of life, since it is their world that they will be inheriting fairly soon, I guess already. The Commission should realize the importance of educating these children so that they can treat our earth with the respect needed so that they and their children can continue to enjoy it.

As a specific suggestion, this group might think about recommending to the Minister of Education that the study of environmental issues be given a higher priority. Schools need more time, resources and information. This information has to be factual, specific and as current as possible if we are to promote informed decisionmaking. Thank you for this opportunity to be with you tonight.

MODERATOR MILLARD: Well, thanks very much. I think that was an excellent start for our evening.

The next presentation is by Bill Stephenson of Alberta Gas Ethylene.

BILL STEPHENSON: Mr. Chairman, ladies, gentlemen and students: First of all, it's very enlightening to see the base of education that's being developed by the students in our school, and I want to commend Joseph

Welsh School on their presentation. Maybe they can teach some of us older individuals how to do things right.

I welcome the opportunity for this verbal presentation to the Clean Air Strategy for Alberta. I am Bill Stephenson, Vice-President of the Alberta Gas Ethylene Company Limited, a wholly-owned subsidiary of Nova Corporation of Alberta. I am Plant Manager for the olefins manufacturing facilities located at Joffre, Alberta.

Nova Corporation is a member of the Canadian Chemical Producers Association and supports both the verbal and written presentation that was presented in Edmonton on Friday, November the 16th. A Nova verbal presentation regarding our Medicine Hat methanol manufacturing facility was offered as input on Wednesday, November the 28th. I will be brief in my remarks and attempt to avoid duplication of input contained in the previously referenced presentations. I wish to use our Joffre facilities as an example for the basis of my suggestion.

The ethylene manufacturing process is based on the thermal cracking of ethane, a component present in natural gas. Thermal cracking of ethane yields significant amounts of hydrogen, which are augmented by natural gas to achieve the fuel quantities required by the manufacturing process. Total energy, fuel and electrical power constitutes greater than 15 percent of our direct manufacturing costs. We have since start-up of the first ethylene plant in 1979 continuously improved our operating energy efficiencies as is necessary by the magnitude of this direct cost and its effect on our international competitiveness.

Our goals of energy efficiency improvement continue to result in lower atmospheric carbon dioxide and nitrous oxide releases per unit of ethylene production. Fuel energy consumption has declined by 8 percent per unit of ethylene since 1986. Total mass has increased as a result of elevated production levels, but continued efforts for competitive energy efficiency will gradually erode this consequence of the elevated production levels.

Other activities have reduced our carbon dioxide and nitrous oxide emissions. The carbon dioxide included in our ethane feed stock is now used for enhanced oil recovery. Prior to 1983, this carbon dioxide was discharged to the atmosphere. Some of our hydrogen is now used as feed stock to produce anhydrous ammonia. This synergistic manufacture of ammonia resulted in a 25 percent fuel energy savings for this product, thus lessening atmospheric discharge of carbon dioxide and nitrous oxides, while those of the ethylene manufacturing process increased, as we had to replace the hydrogen with natural gas. The net effect is approximately an 8 percent regional reduction and 5 percent provincial reduction in carbon dioxide.

I have reviewed our ethylene manufacturing process and synergistic processing opportunities to emphasize that international competitiveness is critical and will continue to drive energy efficiency programs, and synergistic manufacturing opportunities can result in lower atmospheric emissions.

I would now like to offer comments on two sections of the Clean Air Strategy for Alberta.

Global-common issues require a global protocol which establishes the same parameters for like type industries. Our ethylene manufacturing facilities are new and have included technology to achieve energy efficiency, which resulted in reduced emissions.

Our second ethylene plant started up in 1984 as 20 percent more energy efficient than our 1979 facility. The process design that was completed for our proposed third facility was 15 percent more energy efficient than our second facility.

Alberta-manufactured ethylene

utilizes natural gas fuel, which yields lower total manufacturing carbon dioxide and nitrous oxide emissions than oil-based petrochemical production which occurs in other parts of North America. Regionly-or nationally-imposed targets could result in uneconomic and unachievable expectations. International demand could result in production in other global locations which may not have equal parameters and, thus, the global emission situation would worsen.

I suggest that the solutions require Alberta to simulate global and national parameters for common global issues which retain a level playing field for Alberta petrochemical production.

I commend the process being utilized by Alberta in developing our clean air strategy and suggest the best solutions to regional issues will only occur if the stakeholders are involved in a multi-apartheid consensus process which weighs benefits and consequences in a total comprehensive manner.

As an example, an Alberta target for CO/2 reduction could be globally offset by a few coal-fired power-producing facilities in other international locations. Alberta contributions to global improvement could have rendered our facilities non-competitive in the process. Solutions to any specific issue, such as carbon dioxide, must be distributed equitably across the major contributors.

Our Joffre natural gas fuel consumption approximates that used for home heating in Red Deer. Our individual automotive fuel consumption is also a significant contribution to various atmospheric emissions. Meaningful and achievable reduction targets must be equitably shared across the total contributory base. Home efficiency standards and automotive fuel consumption targets or alternative fuel technologies required in specific regions must be included to achieve our results.

Stakeholder-developed solutions must consider a total-life-cycle environmental balance. Prevailing practice seems to be targeted problems and command and control solutions. Best net reductions must be identified based on a comprehensive environmental contribution of all inputs to the manufacturing processes.

As an example, I offer the case of greenhouse gases. A full environmental balance of alternative materials may reveal that one has less atmospheric consequence. This would be true for paper versus plastic production. Other concerns for solid wastes would need full evaluation to define least total environmental consequence.

A recent hot-selling item is the

plastic composting cone. I query if a least-environmental result has been achieved, as we have traded a solid waste issue for one which permits multiple small-source methane contribution to the global warming gases. Ground water contamination could also become conventional.

I would now like to make some suggestions regarding economic instruments. I had the opportunity to participate in the Clean Air Strategy for Alberta workshops conducted in Edmonton during September. Additional economic instruments may be necessary but must be developed such that the polluter pays and that international competitiveness is sustained. Economic instruments which become tax revenues must be separated from general tax revenue and designated exclusively to the solution of the problem which produced the pollutant. Such economic instruments should be designed to reflect consumptive use of the particular problem pollutant.

Our ethylene plants use a large quantity of ethane, a hydrocarbon material. These carbon elements are locked into the various derivative products manufactured from ethylene and are not released as carbon dioxide and nitrous oxides, as are those carbons which are fuelled as natural gas. Thus, any specific carbon consumption tax must exclude those quantities which do not produce atmospheric emissions.

Alberta legislation must be consistent in its promotion of the priority environmental agenda. Currently, all machinery and equipment in our facilities is accessible for municipal taxation purposes. Thus, additions to improve identified air emission goals become an additional tax burden without offsetting gains in productivity. This can produce a deterent rather than promote facility investments specific to solving air emission problems.

Economic instruments, if they must be applied, must recognize the priority issues in the total environmental agenda. Our limited resources must be focused to achieving the best overall result for air, water and land. This requires a strict discipline of prioritysetting.

In summary, I suggest that we have to adopt a regime of continuous year-over-year improvement based on applying technology which retains our internationally-competitive position. Our strategy must include a role of catalyzing the global parameters for global issues which retain a level playing field for Albertans. Stakeholders must define the desire and achievable results in a manner which recognizes the limited resources available to our total society. Nova's Joffre petrochemical facility is committed to the responsible care process of the Canadian Chemical Producers Association and has had a continuous program which annually reduces our priority air emissions.

I thank you for hearing my verbal presentation and would be pleased to clarify any questions arising from it.

MODERATOR MILLARD: Thanks very much.

Are there any questions? I take it not.

The third presentation is Teresa Neuman and Loretta Smith.

LORETTA SMITH: Well, Mr. Moderator, ladies and gentlemen, my name is Loretta Smith, and this is my friend Teresa Neuman. We belong to a local environment group called Citizens' Action Group on the Environment. We have here something that we want to share with you.

Environmental issues can know no political boundaries. Pollution kills first without asking what a person's political beliefs are or are not. Therefore, any environmental concerns must be agreed on by all and then dealt with by all.

The first thing on the agenda of any discussion is to state whether there is a problem or not, and if there is, what the problem really is about. We, Teresa and I, will endeavour to illustrate the magnitude of the problems we all face in transportation.

We believe the real problem is the manufacture and operation of expensive, unsafe pollution-causing motor vehicles. In addition, we will give some insight into the possible use of public transit.

The greenhouse effect is real, and part of the reality is that the largest single source of the pollutants that cause it come from the transportation sources. As auto pollution authority Michael Walsh puts it, motor vehicles account for more of the world's air pollution than any other human activity. Individually, a vehicle would contribute seemingly insignificant amounts of the pollutants which cause environmental destruction, but collectively, the impact of the 400 million motor vehicles on the world's roads is staggering.

Motor vehicles burn almost 50 percent of the world's dwindling fossil fuels. Although most vehicle emissions are light gases, the pollutants are measured by weight. The average car driven in Canada will spill 34.4 kilos of hydrocarbons a year, 4,029.3 kilos of carbon dioxide, and 29.6 kilos of nitrogen oxide. Multiply the emissions of each car by the over 12 million registered cars in Canada and you begin to have a handle on the magnitude of the problem.

Close to 300 million litres of moter oil vanishes each year into the Canadian environment. That's almost eight times more oil than spilled when the Exxon Valdez ran aground off Alaska in March of 1989, causing North America's worst oil spill. An estimated 40 percent of the world's nitrous oxides and volatile organic compounds which create smog and acid rain, 70 percent of the globe's man-made carbon monoxide, which can be toxic, and about 25 percent of North America's production of carbon dioxide, which is warming the atmosphere, are produced by motor vehicle emissions.

Automotive exhaust gases have long been recognized as a direct hazard to driving safety. As a major contributor to smog, these emissions frequently have curtailed visibility to the point where automobile accidents ranging from minor fender-benders to more serious life-threatening and even fatal crashes have occurred. The health hazard posed by the various emission pollutants is of a far more serious nature than the problem of reduced visibility. I have here a quote from Professor MacFarland (phonetic) of Harvard, who summarized studies of carbon monoxide as follows:

> "Carbon monoxide poison is an ever-present possibility in the operation of motor vehicles. The problem is becoming increasingly serious because of the increased density of smog and the concentration of

idling vehicles in the metropolitan areas. Small amounts of carbon monoxide are absorbed rapidly by the blood stream, resulting in an oxygen deficiency that may at first be unnoticed by the individual. The initial reaction to carbon monoxide poisoning consists primarily of lower attention, difficulty in concentration and retention, slight muscular incoordination, sleepiness and mental and physical lethargy. Carbon monoxide has the additional effect of reducing body tolerance to alcohol and certain drugs.

Through replacing normal carbon dioxide in the blood, carbon monoxide sets up a situation where either drugs or alcohol, both taken within moderate or prescribed limits, becomes dangerous to the driver. Bumper-to-bumper traffic pours forth a stream of the deadly gas for both motorists and passengers, not to mention any pedestrians walking by. In other words, you drive as you breathe."

Transportation also takes up space. The environmental group Friends of the Earth estimated each kilometer of road or highway takes up about 6.5 hectares of land, remembering that 1 hectare is equal to approximately 2.471 acres. Highways consume the largest amount of space per kilometer. Our cities devote one-third of their area to roads, streets and parking lots. Even relatively small roads can cause major destruction and controversy when they run through environmentally-sensitive areas. Hundreds of thousands of acres of prime agricultural farmland have been destroyed in order to make roads, highways and parking lots, while at the same time Canada's population continues to increase.

On September the 13th, 1899, New York real estate agent H.H. Bliss stepped off a trolley car into history as the first-known auto fatality in North America. Since Bliss, more than 3 million Americans and Canadians have died in traffic accidents. Traffic deaths have grown every decade of this century in Canada and every decade in the United States except the 1940s and the 1980s. Over the last ten years, 1979 to 1989, 81,543 Canadians have died in automobile accidents. This figure was taken from the Red Deer Advocate September the 14th, 1989. And this figure works out as an average loss of 8,154 lives each year. There were estimated 42,042 Canadians killed in World War II, which was 1939 to 1945, and this figure works out as 7,007 lives each year.

Far more Canadians are injured in automobiles than by any other mode of transportation.

Young persons are often the victims. In 1985, 52 percent of persons killed in auto-related accidents were between the ages of 15 and 34. According to the Canadian Automobile Association, it cost the average new car owner some $7,000 a year, not including car pooling, to own and operate a vehicle. However, car drivers directly pay only some of these costs.

Michael Renier (phonetic) of the Global Watch Institute in Washington believes the public's passion for cars might be cooled if drivers had to pay the full cost, which is an additional estimated $3,000 per car annually, which would then be used to maintain roads and highways, parking lots and increased health care premiums. Environmental problems associated with traffic accidents and automobile pollution would also be covered. If these costs were incorporated into the cost of fuel, Mr. Renier estimates gas prices would more than triple.

"Prices are something understood by all people, even the ecological illiterate", says James Roberts, a research assistant at Laval University. The money saved by not owning and operating a motor vehicle could go towards housing, towards a retirement fund, to an improved standard of living.

TERESA NEUMAN: There are solutions. According to research from the outdoor advertising industry, the average car in a Canadian city is carrying only 1.3 people. What we need are higher densities per vehicle. Car pooling achieves that, but the maximum impact comes from public transit. A single 40-foot transit vehicle replaces about 50 cars in rush hour. At peak hours, two 40-foot buses can carry 130 people. Total space occupied? 80 odd feet of a single lane. To carry the same number of people given average ridership of 1.3 people per car requires that the single lane be stretched to some 1, 500 extra feet, to about a third of a mile.

Public transportation means less congestion and less pollution. Building and maintaining city thoroughfares requires enormous quantities of land and resources. If more drivers were to abandon their cars for short in-city trips by public transit, two more environmental problems could be greatly reduced. The expansion and maintenance of a public transit system also requires land and resources, but it is certainly a better trade-off.

It's hard to attract riders to over-crowded, often unreliable transit systems. People won't use a transit system until it's big enough to provide a convenient service. To encourage the switch from private to public modes of transportation, the goal must be an efficient and integrated transportation system that offers commuters as many alternatives as possible. Walking short distances or to neighbourhood stores or to friends' homes is one alternative to driving cars. For people living in the suburbs, car pooling or driving to the nearest transit centre could be possible alternatives.

Perhaps one of the most overlooked modes of transportation is the bicycle. A bicycle burns renewable calories and so is non-polluting. A bicycle tops the list in fuel efficiency for outshining anything else on the road. In a car, one liter of gasoline provides 10.5 passenger kilometers, in a city bus, about 42 passenger kilometers. On a bicycle, the energy equivalent provides more than 425 passenger kilometers.

Right now, bicycle commuting is too dangerous on congested city streets. To encourage suburbanites to make the switch from private vehicle to bicycle, an effort and commitment has to be made by city planners and politicians. More specific bicycle paths, two-wheeler parking areas, bike and ride centres to encourage people to make the switch, as well as washroom and shower facilities could be made available. Once again, the bottom line is an integrated transportation network that provides space and facilities for cyclists.

We realize that the transition to

alternative methods of transportation will take time. In the interim, steps must be taken to make the privately-run automobile less environmentally destructive. Following are a few suggestions:

According to Friends of the Earth, raising the average efficiency of new cars to five litres per hundred kilometers or 56.5 miles per gallon driven by the year 2000 will have a significant impact on gasoline consumption and CO/2 emissions. In fact, this increase will mean over 60 million barrels of oil and 26 million tons of CO/2 pollution would be saved annually by the year 2005.

The Alberta Government should use whatever power they have to push for legislation on new fuel efficiency standards which would stringently be enforced and would provide sanctions for manufacturers who violate those standards. Cars could be tested year by year for fuel efficiency and emission control, as is being done in some American states, before registration is renewed. Car maintenance should be made more economically feasible for the average car owner so that vehicles are kept in top running form.

Another idea we had was that tax incentives could be given to companies who provide programs that encourage their employees to be more environmentally-conscious by car pooling, taking public transit, bicycling or walking to and from work. Monetary incentives could be provided for companies to convert their transportation fleets to alternative fuels, such as natural gas, propane, diesel, electricity or, ultimately, solar power.

Inter-city travellers can also learn to rely on public transportation more. How we travel from city to city is just as environmentally important as how we travel from home to work. Once again, energy efficiency per passenger kilometer is the key issue. To travel by train takes 270 b.t.u.'s per passenger kilometer, by bus, 320. By small car with two passengers, that jumps to 1,000 b.t.u.'s per passenger kilometer, and a Boeing 767, 1,990 b.t.u.'s per passenger kilometer. Obviously, trains and buses are the most efficient modes of cross-country travel. Unfortunately, we've been abandoning them in droves in the last few years.

Here are some statistics from Transport Canada: From 1984 to 1987, the number of passengers choosing air travel steadily increased, reaching 18.9 million in 1987. In 1981, 8 million Canadians travelled by Via Rail; in 1987, the number of passengers had fallen to 5.9 million, a decline of 26.3 percent. The total number of inter-city public transportation passengers declined from almost 60 million in 1980 to about 46 million in 1987, with buses losing about 90 percent of that shortfall. Cheaper fares and better service from the airlines as well as more money in passengers' pockets account for part of the decline in train and bus travel; however, a large part of the problem was the Federal Government's decision to abandon Via Rail.

Greater emphasis must be placed on the education of children and adults. Curriculum changes or expansions should include environmental topics such as global warming, pollution, acid rain, alternative energy sources, protection of natural habitats and wildlife. People of all ages must push for legislation at all government levels to ensure responsible reforestation and management of existing wooded areas by developers, industry, city planners and private landowners. Tree planting projects, such as that of the citizen action groups on the environment Trees by 2000 should be encouraged and supported. The importance of trees and their absorption of CO/2, production of life-giving oxygen and filtering of other air pollutants should be recognized and utilized to its full potential.

LORETTA SMITH: In closing, we would like to say that the automobile has transformed a lot more than our atmosphere. It has changed the face of our cities and suburbs and the way we live in them. We believe Henry Ford would be appalled by the sheer magnitude of modern problems brought about by the very success of the car: Air pollution, acid rain, mis-used natural resources, excessive noise, destruction of land and wildlife, human death and suffering, and all on a grand scale.

I will read a poem written by my ten-year-old daughter Lisa that I believe is an embodiment of the situation we now find ourselves in:

Our world is like a round garage
With many cars and people
The air is filling up with gases
And soon there will be no people
Nothing but toxic fumes
Houses standing empty
No animals can live
No shrubbery or life forms
Just emptiness and silence
Nothing more, nothing less.

Thank you for giving us the opportunity to speak with you tonight.

MODERATOR MILLARD: Thank you very much. Those were very interesting statistics.

Now, that completes the list of people that indicated that they wished to make a presentation. Is there anyone else that would like to?

Yes, sir?

UNIDENTIFIED SPEAKER: To me, this is very impromptu, this presentation, because I was driving around looking for a job today and happened to stop here, was going to have a cup of coffee and noticed this ad for this little get-together here tonight.

It's kind of ironic; some schoolteacher I'm sure mentioned that these kids will inherit this earth and then he said I think they already have inherited it. And when I was in Grade 3, I seen a presentation about the environment, and it had to do with the Rhine River in Germany, and here I am 33 years old and we're still talking about cleaning up this earth. We're still talking.

I inherited this earth. I started a company to clean this earth up, and nobody wants to pay the bill. To be exact and to be honest, there are some people out there that definitely do and try a whole lot harder than the whole rest of them, but they are bucking the system and have to pay extra dollars, when they see the guy on the other hand that doesn't have to, and it doesn't make sense to him economically to do that. And that is true; he doesn't want to pay my bill to clean up something when somebody down the next township definitely doesn't have to spend the same dollars.

We're still talking about cleaning it up, and how much longer are we going to talk about it? I'm 33. I think when I'm 55 I'll still probably be able to stop somewhere in another town and bump into the same kind of a situation as what I'm seeing here tonight. We will still be talking and we'll still be putting on these beautiful presentations and boards and elaborate computers and et cetera.

I need my truck, and I need it. It's a diesel, and it burns lots of it, and I used to have 108 people working for me, and we burned lots of fuel and had lots of telephone time, and I need it to get to talk to that gentleman and that gentleman and that gentleman to see if he's going to give me a job to clean up his problem. And so does everybody that got here needs their truck.

I also farm. I need my big diesel tractor to pull that plow and that cultivator and to pull that combine and feed them cows when it's 50 below so that everybody out there in that restaurant can have a steak. And I hope they're eating lots of steak. I don't think they're eating as many as they used to, but hopefully they'll start eating more come July.

But I don't know why we can put on all these elaborate things. We're still talking about it, and I'm proof of that, we're still talking, and I'll guarantee you when I'm 55 we'll still be talking about it.

You talked about a war that killed so many people compared to cars? We could have a war tomorrow and it's going to be over what is one of the major pollutants that we were just talking about, gas and oil. I'm not really worried about that war or the other wars or how many kids got killed in cars, because I could be the next one to get killed in a car. Henry Ford started that. The Indians said that there was pollution the first time they seen the gull-darn railroad go across, and it's still going across, and we're still going to be talking about it.

I don't think this is ever going to get cleaned up. Economically, it is just not feasible. We can't change it 110 percent. We can make some improvements, but we're not going to clean it up, and I don't think all the words "Environment" printed all over everything, caps, T-shirts, schools, billboards, sides of airplanes, cars, pick-ups, you name it, is not going to make a world of difference. We've got to be realistic. We've got to live in a certain way, and we've got to feed the people in a certain way, and we have an industry that is supplying that to us, and that's the oil and gas industry. And they have to keep producing and keep looking and keep exploring, whether it's in Canada, United States or in Iran where they're going to have the next bomb drop. I think it's all nice to talk about it, because we've been talking about it since I was in Grade 3, and I think, like I say, that we're still going to be talking.

It was nice to hear all them statistics about cars and how many people are going down the road. I'm driving around all over today for an hour by myself. I don't need anybody else sitting in my truck telling me how to get there. I'm quite capable of reading the road map, and until I can't read it, I guess I can't drive and then I'll have to hire a driver.

So as far as all these great car pools and getting everybody stuck on buses -- and a train, the doggone train won't get people where they want to go. People between Calgary and Edmonton, they don't want to travel all over hell's creation here. I don't know why the railroad wasn't built right alongside the four-lane highway so you can get them right to where they've got to get to. I mean, we're travelling -- they're travelling right up and down the route that they're hauling the grain. It just don't fit. If we're going to build this kind of stuff, it's got to be efficient and we've got to change things. That's my opinion on it.

Everybody here got here somehow. We're burning gas and oil to get here. We're burning lots of it here to get these lights on, and we have to do it, so you're going to have some waste. I wouldn't be out looking for a job either if we were recycling the burned tires that went up in Montreal or Ontario. The guy up in Edmonton which has got another ten billion of them, he's sitting there and he's saying, hey, I would like to do something with it. There's nowhere to put it.

We can talk recycle and, man, you can keep talking about it, but until we've got a place to put that, to recycle it, and a place to get rid of that recycled product, what are you going to do with it? We're going to keep digging, we're going to keep burying, and it's just that simple. I don't see any changes. It just costs too much money to make these changes.

And that's all I have to say about the subject. Probably lots more, but that's all I've got to say about this topic.

MODERATOR MILLARD: Good. Thanks very much.

Does anyone else wish to make any comments?

ELMER KURE: Well, Mr. Moderator, I came here mainly to listen, because I'm retired now, Vern, and I can afford the luxury of listening to people and not have to be under the gun, so to speak, to come up with some solution.

Obviously, the previous speaker has thought about this a great deal and is not sure that we can change our lifestyle to the extent that it's needed to do something about the quality of the air. And some of us -- I believe that, Mr. Chairman, that we have been in the last year almost snowed under with good stuff. I mean good studies and concerns and policies that are being put forward both by federal and provincial governments to I guess get green overnight. Some of us have been green most of our life, probably because we were brought up that way.

And I was brought up on the farm and farmed for 30 years, and I had a lot of time to think about the issues and I had, I guess, a little concern for wildlife that led me into the public relations field in the last few years, but I have had the time to read most of the expert witnesses before the Parliamentary Committee on global warming, and the stack of Hansards are about that high now that McDonald and his committee have heard. And there has been solutions proposed in almost every field, almost every field from the production of electric energy through the various means that we're familiar with, even here in this province, to the operation of the automobile.

I think the kids made a really good point that -- they were saying that, if each of us does what we can at our particular individual level and we start from that point, we can do something and it will amount to something in terms of total impact. There's no question about it. A very little change in our lifestyle will make a great deal of difference to the atmospheric pollution in this world.

Despite the fact that Canadians may be only -- contribute around 2 percent to the global CO/2 doesn't mean that we have any less responsibility. In fact, I think it really says that we have a great deal more responsibility because how are we going to convince the rest of the world, third world countries in particular that are going into looking at lifestyles like ours? Obviously, most of them won't achieve that. We will probably find that we have to change our lifestyles a bit, quite a bit, but I believe the technology is out there.

I heard a -- or read presentations before the Parliamentary Committee that suggested that we in fact could achieve a 20 percent reduction in CO/2 by the year 2005 if we do this strategy or that particular strategy. I don't think it can be done by any single strategy, but I think if we start from the basics that takes conservation of energy as the first step, if everybody can get in step and think with conservation -- I know my friend that's driving the diesel truck is probably driving the most efficient truck ge can get. He's probably got to to make it pay.

I know the farmers in my district are at no profit margin right now. I know that. They're going to have to start looking at their overheads, and maybe it will take a bit of a downturn in our economy to have us -- make us take a real strong look at our profit margins, because that profit margin has been a continual push for more consumption. Overheads, maximizing production has been the way we've been -- we've been on a treadmill a long time. We somehow got caught up in this I guess growth -- this notion that, without continual growth, that we're dead. I believe it's a falsehood, and I believe that we have taught ourselves to believe that, and I don't think it's good for our country.

If we could get ourselves convinced that a steady state would be much better, not only in terms of our lifestyles but our future as far as pollution, whether it's air, land and water -- my agrologist friends tell me as a farmer that we've lost about half the productivity of our soils in one human lifetime. That's really scary. It's really scary. And the young farmers out there that say, well, they have to -- to make ends meet, they have to maximize production, and pretty near every industry has been doing that, and I think that's where we've gone astray. We have simply set our production goals to a point where the cost of pollution and overhead is going to kill us, and not only kill our economy but kill our quality of life.

And I think maybe my main reason for coming is because, having read most of this good stuff, I was interested to see whether the strategy that would maybe emerge from this exercise, as one of a number of exercises that's going on in Alberta, would somehow fit into the provincial conservation strategy that some of us have been working with for the last five years.

And we just in October this year released the draft Alberta Conservation Strategy proposal, and while it's only a draft outline, it nevertheless takes into consideration that every sector in our province, as in the country, will have to do something in terms of dealing with the issues of pollution, whether it's air or under water. There's no question in my mind we'll have to do that.

It's only three or four weeks ago

in this same hotel there was a panel here conducting a similar exercise, and it was in regard to the draft environment bill that's now in draft form. I was here, and they were disappointed with the turnout, and I'm sure that you're feeling a little disappointed with the turnout you had across the province. I think the -- we've been deluged, Mr. Chairman, with this good stuff. In the last month, we've had a draft environment bill asking for public gut reaction. Two weeks ago, we had the Wetlands Policy Paper asking for public reaction. Now we have the Clean Air Strategy and -- looking for public reaction. Of all of those things, I think this one is probably the hardest for the individual to comprehend.

Most of us understand what happens to water when it's polluted because it's something we use every day. Not that we don't use air, but it's more of an insidious thing to deal with. Those of us that know a little bit about the land know what happened to our wetlands, we know why there's got to be a change in our policy in terms of how we look at wetlands.

So I guess what I'm trying to say is that, if you're disappointed, I say don't give up. I hope that what you've got going here will somehow fit into the total strategy in the province of Alberta, because I think it's super-important that we do that. And we can achieve it. My friend feels that we will probably talk about it -- I'm sure we will talk about it for the next 30 years. I've been talking about it twice as long as you have and I'm still here, but I am seeing people responding like never before. Those kids here tonight are good indication that people are responding.

The young ladies that made the presentation specifically with the automobile, it was a good one. It was a good one. We know darn well that we can have more efficient automobiles and trucks and tractors. We know darn well we can. They told us 30 years, Vern, that we wouldn't be able to get much over 20 miles per gallon. Now we get 40, and there's no question we'll get 60 and eliminate most of the noxious substances that go into the atmosphere. Right here in Alberta, our own utility, TransAlta, are on the road to, I think, a major -- a major decrease in their atmospheric emissions. I see nothing but positive stuff coming out of this major concern about the environment that's sweeping the country, and, obviously, we'll all need to turn a little green.

I think how we approach it may be the crux of your question. Obviously, if we start from the basis that conservation has got to be the number 1 approach, individual action. Secondly, obviously -- and the other speakers have mentioned it -- we need to establish a climate for a standard that's as close to if not zero pollution in this province, whether it's our water or our air, and technology has already told us it's there. It's obvious we're a little slow at grasping onto it because we haven't had to, we haven't had to, and that's the only reason we're not doing it.

The fact is there are clean fuels, we'll be using them, and it won't be too long. The fact that we have scads of coal in this province don't necessarily mean we're going to burn it. I think oil is a little more difficult to deal with, simply because there's been big bucks in burning it, there's big incentives to produce it. I'm not so sure that -- that the scarcity or the high prices of oil is going to slow us down a whole bunch, but I think that we can impose standards on ourselves, we can encourage our government to look at standards that are achievable.

I believe that we talked about this when the draft Environment Act was being discussed, that if we were to adopt a no pollution at source for our rivers in this province, we would all be better off and we wouldn't have to talk about it 30 years from now that the river is still polluted. You can't eat the fish in this river? Most every river in Alberta is polluted and we're living at the head of the creek, for crying out loud. We brag about our standards being the best in Canada. Well, they should be. They should be. Because every time that we pollute the river, we mortgage the cost of development downstream. It's not fair. We wouldn't like it if they did it to us. So I think maybe when it comes to clean air, it can be achieved.

I had the occasion to ask the Chairman of TransAlta the other day what he would do if Chief John Snow and the chief from the Peigan tribe, who probably -- Stoneys and the Peigans probably have two of the best wind farm locations in Alberta, what he would do if those people came to him and say, we'll supply the land and a bit of the capital investment here, how about tying us into the Alberta power grid?

And I was pleased with his response. He said, I think we would have to sit down and talk. That's what we've got to do. We can do it. The fact is we can probably produce all the power we need without any pollution in this province. It's just a matter of the willingness to do it. We've taken, I guess, cheap fuel, cheap power, cheap food for granted, and it has led us down the wrong path.

I think maybe I should stop, Mr. Chairman. It's a big topic, but -- I wish you well, and don't let the small crowds deter you, because I hope that one day we'll be able to at least say that we had enough brains and guts to coordinate and do the things that we know that's got to be done. And I think we can do it.

MODERATOR MILLARD: Thanks, Elmer. Are there any other -- does anyone else want to make any comments?

We were wondering about asking Doug Brough from the Energy Audit of Energy and Natural Resources to make a brief presentation on the kind of work that he does in going around and auditing commercial establishments and schools and hospitals and so on. Would there be an interest in that?

ELMER KURE: That sounds good to me.

MODERATOR MILLARD: Doug, are you around? Good. Would you mind, please?

DOUG BROUGH: Well, good evening, ladies and gentlemen. My name is Doug Brough, and I'm with the Alberta Government's Energy Efficiency Branch. I'm not here really to make a submission. I'm just hear to tell you about a couple of programs that we have within our branch and what we are doing today about energy conservation and how it affects the environment.

What you see in front of you is our energy audit service. Upon request, a team of engineers and technologists visits these buildings and plants throughout the province to conduct these computerized audits on them. This service is a no-charge service to the public to help them with their energy bills.

We have a number of instruments aboard, and when we arrive on site, we tour the facility, we take measurements on ventilation, we measure the boilers to determine how efficiently that they are burning. We also have power factor, electrical measuring devices to measure the draw of electrical motors, electrical equipment, et cetera. We pay attention to lighting. We take light level measurements and a number of other measurements.

What I want to talk to you is just a little bit about the program. To date -- this program started back in 1981, so it's almost ten years old -- we have completed about 1600 energy audits in the ten years. This is just a pie representation of where the areas and what percentage of the audits were done throughout the province.

Energy usage: The Energy Bus identified a total usage of $180 million worth of energy. After the audit, the potential to reduce is down to 125 million. In other words, the Energy Bus had a potential savings of $29 million at those 1600 facilities.

In terms of kilowatt hours, 10.7

billion kilowatt hours was identified after the audit, they have a potential to reduce down to 8.9 billion, which is a savings of 1.8 billion kilowatt hours or about 17 percent of the energy could be saved.

What areas do we take a look at? We find the savings, the majority of them, being in the ventilation and lighting areas. We look at heat recovery, power factor, building skin. Building skin is the heat loss through the walls, roof, doors and windows. In this particular case, we look at reduced temperatures, we look at temperature setback, upgrading weather stripping, et cetera. We look at load scheduling, combustion efficiency improvement and fuel conversions.

I guess this -- it comes down to now is the bottom line. The Alberta Energy Bus has identified 1.4 million kilowatt hours worth of natural gas savings and electricity at 312 million kilowatt hours. In terms of CO/2 savings to the environment, we have identified 307,000 tons worth of CO/2 due to electricity savings and 263,000 tons worth of natural gas savings.

There is a couple of other programs that we have, and I just want to quickly mention them. There's three others, actually. One is the residential program. Those are those red and white booklets at the side. They tell you how to make your house more energy-efficient. We also have a guy wired to a telephone in the office; if you have any questions regarding your own house, you can phone in and he'll answer them for you.

We have an educational schools program. Public shows are taken out to the schools and given to grade -- elementary children on the importance of energy efficiency and the environment. We have senior high school kids. We have physics kids, and we have a new game called Strategeum (phonetic). It involves a game which lets you control the world for as long as you can based on energy and the environment. It really teaches high school students and teachers the implications of both.

And, lastly, we have a transportation program. That Energy Bus that you just saw earlier is also part of that service. We do energy audits on fleets. If a large company has a number of fleets and they want an energy audit done, we'll go out there, we'll take a look at their routing plans, try and re-route to make more efficient use of trucks, perhaps drop a few out to save on fuel.

We have driver training for energy conservation awareness programs, and we also look at maintenance on vehicles. We're capable of testing them from an emission standpoint to also let you know the savings. To date, the energy transportation audits are saving on average about 30, 35 percent, and that's a combination of correct vehicle selection, vehicle maintenance, as well as the routing.

Just one last point that I want to point out is this simple fluorescent bulb here which you can even put in your own homes is 13 watts and it can replace a 60 watt bulb and give you the same amount of light. In its lifetime, which is 10,000 hours, it will reduce the CO/2 emissions by half a ton, or, in other words, 1,000 pounds, so you yourselves just by replacing one simple light in your house can help reduce emissions.

If you have any questions regarding these programs or how they are available, don't hesitate to see me after. They -- each one of them is no charge and is available to you to make you aware of how to save money, help the environment and promote energy conservation. Thanks.

MODERATOR MILLARD: Doug, thanks very much, but I've heard you talk about specific cases where you've gone out. Could you perhaps illustrate your process by some specific examples?

DOUG BROUGH: Okay, a specific example: We went to a high school and we took -- we measured the exhaust fans, amount of air flowing through that school. We found that school was over-ventilating by more than four times the required rate, and in doing so, by changing the pulley sizes, reducing the amount of air flow but still maintaining adequate requirements and healthy requirements, they saved over $60,000 per year in that instance, to give you one example.

Another interesting one was at a distillery company in Calgary. What they found, they were using old boiler systems and they were out of Corvettes, out of the old war ships, and they were using that to -- for their distillation process. They had fixed combustion air to them, so as they were loaded between half, three-quarters, up to full, their efficiency ranges were different. At full capacity, they were around 80, 83 percent efficient, and they dropped down to 50 to 65 percent.

What we suggested there is that they install a control which automatically regulated the combustion air into the boiler for peak efficiency. As a result, I believe they spent $22,000 putting in the control and it saved them well over $100,000 a year by putting that in. It ended up being a two- to three-month payback for them. That was an excellent energy conservation opportunity.

MODERATOR MILLARD: Are there any questions of Doug?

ELMER KURE: I've got to ask Doug a question. It's about a year ago since I heard about the small fluorescent light that fits in the ordinary light socket, and at the time, they were selling them at about 24 bucks a piece, but they aren't available. So --

DOUG BROUGH: They are now. You can buy them now. This one here I have here has got -- it's disposable. The ballast is built right into the lamp. There are other types that you can just pull out the fluorescent tube, pop them in. I think the tube runs about $7.00. But they are available, there are some stores out there which do sell them, and most lighting places should be able to put you in touch of where to buy them.

ELMER KURE: Okay, I got a listing of the available outlets in Red Deer about three months ago, has the light, is supposed to carry them, but they didn't have them. Since then, they've gone out of business. Now, is there a place in Red Deer where people can buy this thing? Because I think they would sell like hot cakes.

DOUG BROUGH: I'm not sure in Red Deer. I know in Edmonton and Calgary you can buy them. I imagine if you phone them, there would be some way that they could get them up here or put you in touch with a lighting guy that could ship them up here that you could pick them up, but they are becoming more and more available now. I believe that this still is about $20.00, but it does last 10,000 hours as compared to a thousand hours for the typical incandescent bulb. So you get nine to ten times the life on them.

ELMER KURE: I have one myself now, so -- but I think if someone had a truckload, they could sell them, you know.

DOUG BROUGH: Yeah, it would probably be a good business opportunity here. Even using -- if you have four-foot fluorescent tubes, changing them to 34-watt misers on a burn-out basis can reduce energy costs by 12 percent.

With our residential program, simple things like keeping the back of your refrigerator coils clean can cut the cost down by 5 percent, which in turn will save about 15 percent on CO/2 emissions.

So there's little things that we can do now, and I think that the Alberta Government has programs which are out there, and we are doing something right now, we're educating the kids, we're promoting better use out in the industry, and we're showing them how much they can save.

And we have a follow-up program on our energy audit vehicles that, a year and a half down the road, we'll give you a call and we'll say, hey, how's it going, what have you been doing? And we're getting about a 65 percent response rate that they are doing things out there on the audits that we are doing.

ELMER KURE: Can you tell us how many of the government buildings have had an audit done?

DOUG BROUGH: Government buildings, okay.

ELMER KURE: I don't want to put you on the spot, but it seems to me that --

DOUG BROUGH: No, no.

ELMER KURE: -- we have been doing this thing for nine years.

MODERATOR MILLARD: As a matter of fact, Elmer, I just decided after listening to Doug today that I'm going to arrange for the W.C.B. offices in Edmonton to be audited. I'm not sure if they have been done, but assuming they haven't, they will be.

DOUG BROUGH: In terms of government, 5 percent of the total we have audited. But we should also look at schools, we should also look at recreation facilities, because they are somewhat government funded as well.

The government here mainly refers to R.C.M.P. stations, et cetera. The agriculture at 1 percent, we have done a couple of agriculture research farms, again being government.

But our main focus is to try and

help the public, help you people out. That's why most of our audits are in the commercial section. Residential, we do not do audits on houses. That refers to apartment buildings. And I guess you could also consider municipal. Municipal are a lot of Town, City buildings across Alberta. We have done a number of audits for the City of Red Deer. We have done all their arenas, their swimming pools, their community centres, et cetera, and we have done quite a bit across the province to help small towns out.

So we are looking after -- or trying to do the government as well as the private sector, but I guess you can appreciate we only have two vehicles which do all this, and that's why our backlog is about four to six months. Hopefully, in the future, we can expand this program and cover more area.

JASON EDWORTHY: In commercial establishments, would you look at a farm, like a dairy operation?

DOUG BROUGH: Yes, we would. We have done a couple of big dairy outfits. We have done chicken barns. We've even done pork and pig barns. We'll touch any building that you have out there, except, at this present point in time, a private house.

MODERATOR MILLARD: Thanks very much, Doug.

Are there any other submissions or comments?

Well, perhaps I can say on behalf of the Clean Air Strategy group that we really do appreciate you coming out, and we welcome your comments and suggestions, and if anyone wishes to file a written submission, you can do so by sending it to the -- I think there's an address; is that correct, Bob?

BOB MITCHELL: Right, there's an address on the blue folders, the overview fact sheet that people picked up on the way in.

MODERATOR MILLARD: Thanks again.

(Meeting ended at 8:50 p.m., Thursday, December 6th, 1990)

COURT REPORTER'S CERTIFICATE:

I, Louella Wood, CSR(A), Court Reporter, hereby certify that the foregoing pages contain a true and correct transcription of my shorthand notes taken herein, to the best of my knowledge, skill, and ability.

Irene L. Meyer CSR(A)

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ORIGINAL

CLEAN AIR STRATEGY FOR ALBERTA

Transcript of Proceedings

Regional Meeting

Held at Pincher Creek, Alberta, on
Thursday, December 13th, 1990

Appearances:

Vern Millard -	Moderator
Cheryl Bradley -	Western Environmental and Social Trends
Louella Wood, CSR(A)	Court Reporter

Meyer Reporting * 900, 840 - 7th Ave. S.W., Calgary * 236-0792

Transcript of Proceedings

(Meeting commenced at 7:10 p.m., Thursday, Dec. 13th, 1990)

MODERATOR MILLARD: Good evening, ladies and gentlemen. I'm not sure if the microphone is working, so I'll just speak a little loudly.

Let me welcome you to this meeting of the Alberta Clean Air Strategy. We have been meeting in various parts of Alberta. This is the last session. We've met in eight different communities. Actually, we've been in Pincher Creek about a week ago, but you people had so much snow that we had to leave without having the program.

But I would like to start with making some introductory remarks about what the Clean Air Strategy is about. Then we have a group of people who want to make -- a small group that want to make submissions. And, after that, we may have some discussion. We'll see how the evening goes.

First of all, let me comment on the Clean Air Strategy. What is the strategy? Well, it really starts with the fact that our planet is becoming increasingly stressed by emissions being made by our occupation of the planet.

The -- you're going to have to forgive me. My eyesight is so poor I have trouble reading this.

There is a growing consensus on

behalf of scientists that the emissions are causing serious problems and that corrective action needs to be taken.

The Clean Air Strategy is designed to encourage public discussion of these issues, and the intent is that the Clean Air Strategy will identify the most important issues or problems, that it will develop practical approaches for reducing emissions, and that it will recommend policies and programs to the Government that will result in the reduction of emissions.

The strategy has four basic phases: The first step occurred last September at a workshop where various stakeholders attended to review the main issues that seem to be apparent in terms of clean air problems. There were representatives from industry, environmental groups, public health, research and government. They identified the issues, and they are in the process of considering how they can be best assessed. Thank you. That certainly helps.

The second stage of the process are the regional sessions, one of which is this evening's session, and it's designed to get the views of people in the area that the meeting is held in with respect to these issues. The public is invited to ask questions, to present views and to recommend options for action on the clean air issues.

The third stage will be a summary workshop which will be convened in the spring of the new year, and it will include representatives of the various stakeholder groups, and the workshop will review and consider the information that has come out of the regional meetings, and it will develop a proposed strategy, which will then be forwarded, in the fourth stage, in the form of a report to the Government.

Now, let's look a little bit at some of the background to this whole issue. What are the major problems? As I said before, continuing research by scientists has indicated that our planet is under serious strain. An example of the kind of consensus that is building took place in November of this year when at a Geneva conference on global warming 700 scientists recommended strongly that action be taken to reduce emissions to the atmosphere.

The kinds of issues that were predominant in these various discussions on an international level are, first of all, the so-called greenhouse effect or what is also called global warming. It's caused by carbon dioxide and other emissions to the atmosphere. The gases are trapped -- or trap energy radiated from the earth, and fossil fuels and water are the major sources of greenhouse gases. Emissions occur in both production and in the use of fossil fuels.

This is a schematic sketch

showing how the system operates. You can see the sun, and this corner depicts the earth, and heat is radiated -- energy is radiated from the earth, and as the gases increase in the atmosphere, it means that more of that energy is returned to the earth, thereby causing the increase in temperature. Fossil fuels, oil, gas and water are major sources of greenhouse gases, and it's important to recognize that emissions occur, as I said before, in both the production and use stages.

The second problem area is acid deposition or so-called acid rain. This has received a good deal of publicity over the last decade or so. We've heard about acid rain in Eastern Canada and Eastern United States. It's caused by sulphur oxides and nitrogen oxides in the atmosphere. Sulphur oxides occur from processing fossil fuels, sour gas and coal. Nitrogen oxides occur from industrial and consumer operations, and in particular the operation of motor vehicles.

A third general problem is smog. Again, this has received a good deal of publicity over the last couple of decades, but particularly in other areas. We've all heard about California, the smog problems in L.A. and so on. Well, it occurs beyond that. It occurs in Eastern Canada, and, indeed, to some degree, it occurs in Alberta in the two major centres, Calgary and Edmonton.

Well, what is being done about these problems? Certainly, research has been going on for some time, and as a result of that research, national and international studies and agreements have been reached. For example, in 1985, there was a U.N. agreement on the reduction of sulphur oxides. In 1988, there was an agreement on nitrogen dioxides. And carbon dioxide has just recently been agreed to at an international level, and the target, as I'm sure you're aware, is that the CO/2 emissions would be stabilized at the 1990 level by the year 2000. And, of course, research is an ongoing matter in this area.

We need to fit Alberta into the overall focus of these questions. And the first thing we need to recognize is that Alberta is a major producer of fossil fuels, which, in turn, of course, is a major contributor to the emissions. In terms of gas, Alberta accounts for 83 percent of Canadian production. In the case of oil, it's 80 percent. And in coal, it's about 44 percent.

And I suppose, not surprisingly, as a result of that, Alberta's share of the emissions is relatively high. In terms of sulphur dioxide, it's 15 percent of total Canadian emissions. For nitrogen dioxide and carbon dioxide, it's 23 and 22 percent respectively. Almost a quarter of Canada's emissions of those two gases occur in Alberta. And that means that

Alberta has the highest per capita rate of any of the provinces in Canada, because we really account for only about 10 percent of the population.

Now, an important factor, though, is that 75 percent of Alberta's oil and gas is sold outside the province. That means that the emissions that take place in the process of producing that oil and gas really are being carried out on behalf of other consuming areas. So one has to bear that in mind in terms of attributing these emissions to Alberta; we're contributing, but we're contributing on behalf of other consumers.

Another interesting statistic is that Canada's share of the world's CO/2 emissions is 2 percent. That means that Alberta's share of world emissions, CO/2 emissions, is about a half of 1 percent, not large, but when you can relate it on a total basis, it's a substantial amount.

We also have to recognize that fossil fuels are very important to the economy of the province. In 1989, the total value of production was almost $16 billion. 2.4 billion was paid in royalties to the Government, and that represented almost 25 percent of the total Government revenues in 1989. The fossil fuel industries account for about 250,000 direct and indirect jobs.

I think it's important that

we recognize that we're all involved in this process. It's not the kind of situation where we can point the finger at other people and remain free ourselves. For example, CO/2 and NOx emissions are roughly split one-third by the energy industry in producing our energy products that we all use, another third is attributable to other industries in the province, and then the remaining one-third comes from the public, from you and I in the various activities that we engage in, whether it's driving our cars or heating our homes or whatever.

An interesting question is what do we mean by "clean air"? You can define "clean air" so that it's air that doesn't contain contaminants to the extent that it would cause adverse effects on human health, vegetation and materials. But this may not really be a sufficient definition, because it really doesn't allow for the long-term effects of emissions to the atmosphere.

If you assume, as most of the people have that we have met with in these regional meetings, that Alberta has clean air, I think we should qualify that by saying that we have clean air today but the air contains emissions that will have long-term effects on the planet, so in deciding what is clean air, one has to look over the long term rather than just at the present.

Now, how can we reduce emissions?

There are really four basic ways:

One is we could produce less energy. If we stopped producing gas or we stopped producing oil from the oil sands, we would certainly reduce the number of emissions in Alberta significantly. Of course, we would also have other impacts, primarily economic.

We can use less energy, we can stop driving our cars as much, or we can heat our homes to a lesser degree.

We can also use energy more efficiently. We can, for example, insulate our homes so that we don't require as much energy to provide the same level of temperature in the home.

Or we can shift to non-polluting energy sources. And I guess, having regard for the wind factor in this part of the country, wind energy is something that comes to mind immediately in terms of that fourth alternative.

How can we as individuals reduce emissions? And that, of course, is the focus of these regional meetings. We want to get your suggestions, ideas and advice with respect to this.

Clearly, education is a major factor, and that leads to the question of how can that be achieved? I might say in terms of education that the meetings that we've been holding have not been very well attended, limited interest in the subject; at least, that's the way it would appear. And probably education is one of the factors that's missing in terms of -- and the cause for that lack of interest in the subject.

And I guess the burning question, in a sense -- pardon the pun -- is how do we become convinced that we must change our lifestyles? Because that's a factor that's a major ingredient in terms of reducing emissions. The impacts from the emissions are so remote, either on a geographical basis or on a time basis.

What policies and programs are required for an effective clean air strategy? Well, again, we want your suggestions. Some possible developments are the establishment of new standards; another possibility is limiting total emissions in a particular area; a third would be to establish incentives to develop new technology; we could also change the current financial incentives that tend to increase the use of energy; and, of course, we can expand research. This is just a possible list. There are, I'm sure, many other alternatives that are available.

Well, that, ladies and gentlemen, provides you with a very brief and general view of the background to this subject matter. The Clean Air Strategy group have prepared some fact sheets, and if you haven't seen them, I would certainly commend them to your reading. I know I read them a few weeks ago, and I found them extremely interesting, and I think you would all find them interesting.

Now, what I plan to do now is to invite the people who have indicated that they want to make submissions. If there are others that would like to make submissions, even though they haven't registered in advance, we would be pleased to receive them, and then we'll go from there.

The first submission was from the W.R. Meyer High School in Taber. Are they present?

SHAWN BOYLE: Yes.

MODERATOR MILLARD: Good, thank you.

SHIRLEY: We are students from the Chem 30 class at W.R. Meyers High School. I'm Shirley, and I have four other people with me, Vicky, Dawn, Darcia and Ann.

This is a famous quote by G. Lowes Dickinson. He wrote it in 1898. It is nearly a hundred years old, and it is still true to this day.

> "Dissatisfaction with the world in which we live and determination to realize one that shall be better and the prevailing characteristics of the modern spirit ..."

The world around us has a lot of dissatisfaction, but the one that should be most prevalent to us is clean air. This is because, without clean air, our health would lessen and we wouldn't be able to breathe, and life would just not be the same around us.

There are many different types of air pollution. We should become aware of all of them. One of the major causes, you may not know, is carbon dioxide. This is produced by any substance containing carbon, such as coal, natural gas, fossil fuels in general.

All these graphs were obtained through the Task Force of Energy and the Environment 1990. This bottom graph here is about in Alberta what produces -- produce carbon dioxide. We have first about one-third is produced by electric generators, such as coal. And then we have energy industries, such as in Taber we have the sugar factory. They use a lot of fossil fuels, such as natural gas. They use this to dry up the sugar crystals. Then there's the other industries, the transportation, residential and commercial businesses and things like that. This makes up the last third.

Cars do emit some, but they're not as bad as the other industries. In order for us to cut down on the amount of carbon dioxide emissions, we have to look at the energy industries and the electric generators. They produce a large amount.

Then here on the top graph, we have how much carbon dioxide is produced by each province. Ontario is the leading carbon dioxide producer, with Alberta next. Alberta's population is fourth, but per capita we produce the most carbon dioxide emissions.

By the year 2005, they predict that Ontario and Alberta and all of them will still be increasing in carbon dioxide. We should actually stop this, because the air around us is going to start depleting because of the ozone layer and global warming.

Carbon dioxide is the most common man-made greenhouse gas. It's a significant contributor to global warming. Alberta doesn't have to worry right now about acid rain, because we have alkaline dust, and this neutralizes the acid rain so we don't have to worry about soil erosion at the moment with acid rain. But if we continue to burn this fossil fuel and emitting more sulphur oxides and nitrogen oxides, the situation will worsen and we will have to worry about this.

This top graph here is how much each province emits of sulphur dioxides. Quebec and Ontario are the leading ones, and Alberta is third, but by the year 2000, Quebec and Ontario have decreased in their emissions, while Alberta has increased. Quebec and Ontario have made legislations to decrease it by the year 2000. Well, Alberta hasn't yet. I think we should.

On this bottom graph, we have the amount of sulphur dioxide emitted in just Alberta and the different industries that produce it, such again as electric generators, gas plants, oil sands, oil and gas fields and other. In order for us to reduce the amount, we have to look at all of them. They have -- they produce a large amount.

This graph is on nitrogen oxides, and here we have Quebec -- or Ontario leading again, then Alberta, which Alberta is still leading in emissions per capita. Quebec and Ontario decreased somewhat by the year 2000, but Alberta still hasn't moved. They haven't decreased any.

This bottom graph shows how much Alberta -- which industries in Alberta produce nitrogen oxides. We have mainly the same ones, electric generators, energy industries, other industries, transportation, residential and commercial businesses again. Transportation produces more than before.

We have to stop and think. Don't we have to save the air? We're going to be breathing this in order to live.

VICKY: Methane, which is a greenhouse gas, which we can call it, occurs naturally, and the natural processes contribute half of the methane in the atmosphere, and the rest of the half is shared from agriculture and the production of fossil fuels.

The burning of fossil fuels is man-made and is a major source of the nitrogen oxides, as well as the use of volatile organic compounds, or VOCs, as we can call them. The ground level ozone is formed when nitrogen oxides or VOCs react in the presence of sunlight. Another one in our ground ozone is chlorofluorocarbons, or, as we call them, CFCs, and they are man-made chemicals which exist as liquid or gas, and they are not natural, always manufactured, and those such things are in our anti-perspirants or hair sprays. The chlorofluorocarbons contribute to the greenhouse effect, which they thin the ozone layer, which is not good, as you know.

And since Alberta is a leader in emissions per capita, which is higher than Quebec and Ontario, which they are bigger than us, we should start to enact legislation perhaps even more stringent than the larger eastern provinces in order to reduce emissions and pollution, thereby providing Alberta with cleaner air.

And as we were putting together this presentation, we noticed that, since we had so many different opinions in our group, we decided to do -- as students to get together separate from the big class that we have to decide on what we could do to make Alberta have cleaner air. We can relate our project to the environment, which needs to be done. What needs to be done is to get a leader to decide on what to do though still taking into consideration each and every one of our opinions and points of view, for if no one takes charge, nothing will ever get accomplished.

DAWN: It seems obvious that we have to do something now. Our first priority should be to focus on what we can do immediately, starting with short-term goals with a long-term plan in mind. Each person has to do their own part.

We can start with recycling. This may not seem connected with clean air, but it is. If we don't recycle, our garbage ends up in land fills, which emit harmful gases into the atmosphere. We can separate our garbage into organic and inorganic piles. Right now in Southern Alberta, the only things we're able to recycle are bottles, aluminum cans and paint cans. This is not nearly enough. We need to pressure leaders at all levels to provide us with additional centres for recycling our inorganic garbage. We can compost our organic trash and use it as a natural fertilizer.

Another thing we can do to limit pollution is to curb our driving time. We should limit the amount we cruise, walk more and learn about available public transportation. All of us should learn to car pool as much as possible.

The Government has to do its part too. It's our opinion that the Government should subsidize programs by individuals and businesses that would lead to a cleaner environment. This money can be drawn from Government programs which are not as urgent right now, such as military marching bands and the acquisition of artistic pieces. The most important thing they can do is to make and enforce laws to provide us all with cleaner air.

The Government has to set a time line for change to occur. The system of gradual change has worked well in the past, as with the transfer from leaded to unleaded gasoline. This change was gradual, and we had no problem meeting the deadline.

DARCIA: Using the aforesaid method, as you said, we went gradually from leaded gas to unleaded gas, we can gradually go into a new and safer fuel for our cars and heating homes and the electricity. There are many fuels which we can take into consideration, but one that most people don't even know about or are aware of or don't think is a possibility is hydrogen. Hydrogen is a very possible fuel.

There's a quote by David Scott, a leading hydrogen proponent at the University of Victoria in B.C. He says that:

> "There is zero uncertainty that a hydrogen economy will evolve within the next several

decades."

There are two main reasons why hydrogen is such a good fuel to use. And the first is because there's endless supplies of it. You make hydrogen from -- when you electrolize water and it makes it into the hydrogen and oxygen ions, and so since there's always water around, then we'll always have hydrogen.

Another reason that hydrogen is a good gas is that it's not harmful to the environment but, when you burn hydrogen, it just goes back into water.

Another reason why hydrogen is good is because it's a flexible medium for storage and distribution of energy. It's easily converted into electricity by fuel cells, and it can travel through pipelines to the homes to heat them or to provide electricity for them. We can also use it as a fuel for powering cars.

The production of electricity is not that complicated. These are photovoltaic cells, and they're similar to the cells that we now have in our solar-powered calculators except there's a lot more of them. They take the sun's energy and transform it into electricity. Then the electricity is used to electrolize the water into hydrogen and oxygen. The hydrogen and oxygen is then either stored in a big storage container or transferred into pipelines into fuel cells which transform it into electricity for homes, or generators which transform it into electricity, boilers which transform it into heat, or engines which transform it into power for the cars to move.

When hydrogen is available at lower costs, I think the first largest market would be transportation. Even converting a small amount of the cars to hydrogen power would reduce the smog in polluted areas by a substantial amount.

Some might know that hydrogen cars have been produced in Germany. They're trying to figure out a way that hydrogen could be used. The two cars that they have already had and have had success in is BMW and the Mercedes. Though these cars aren't completely finished yet and they're not in the best condition, they still need lots of work, I think we can take an example from that. The BMW has two fuel tanks right now, one for gasoline and one for hydrogen, so it uses hydrogen, but when it -- the hydrogen runs out or it needs another fuel, the gasoline is there.

Naturally, more research and more effective ways are found to make hydrogen. I think that we should follow Germany and make cars like the BMW with two fuel tanks. That way, we can still have the gasoline around, and then we'll slowly transfer into hydrogen like we did to unleaded gas. We'll first start off with gasoline and a few hydrogen tanks and slowly move on until there is only hydrogen and very little gas left. In this way, the Government could also have the producers of cars to make more cars that -- make their cars that are run on hydrogen.

And most of you don't know this, but hydrogen gas won't be that expensive. It will be probably closer to around what gas is now. And you're probably asking, then, if we don't use the fossil fuels for gas and for burning them for heat and electricity, what can we use them for? There are many different ways to use fossil fuels besides burning them. Instead of burning them, we can make everything from eye makeup to medicines that can cure people. And we'll still be using the fossil fuels but we won't be killing the world while we're doing it.

ANN: We as students now realize how important clean air should be to us. We have researched this topic thoroughly and have convinced ourselves as to how harmful the emissions we put into the air really are.

Since statistics show that Alberta is the leading producer of harmful gases per capita, we as individuals and also as a province must work on reducing our pollution of the atmosphere. As we have shown you, we can start the reduction of these pollutants as individuals. Even though as individuals what we can do is of small significance as to what we can do as a province, we cannot rely on others to do it. The place to start is with ourselves.

MODERATOR MILLARD: Well, congratulations. I thought that was very worthwhile and very interesting. Thanks again.

The next submission is from Miss Caroline Yellow Horn.

CAROLINE YELLOW HORN: Good evening, everyone. I would like to acknowledge and congratulate you on your efforts regarding the environment. The fundamental philosophy of my people, the Blackfoot, is as follows:

> "The Creator entrusted our Mother Earth with the responsibility of providing food, clothing and shelter to his children, the real people. (The real people being the Blackfoot) His children are entrusted to maintain harmony and balance with all the winged ones, four-legged ones, all the ones who live in the water and all that grow upon our Mother Earth."

It is heartwarming to myself and to my ancestors that you, my brothers and sisters, after 500 years have discovered we share a common philosophy. And I wanted to take this opportunity to inform you of our efforts.

One: We encourage use of

environmental-friendly products among our people. We now encourage our people to use cloth diapers, to go back to breast feeding, and use recyclable products.

Our individual efforts include disposal of domestic garbage in a proper manner and dangerous products disposal. We also teach and encourage our children to be environmental-conscious.

And the third thing we do is we encourage our young people to enter into the occupations that have to do with taking care of Mother Earth. This is something that our elders are voicing at their conferences.

Four: To establish and maintain dialogue with Government departments and agencies to compliment and enhance protection of our Mother the Earth.

Five: We're in the process of revitalizing and encouraging our people of our traditions and beliefs that pertain to our environment.

Six: The public education being provided by the television and radio is helpful with the exposure of services available and practical knowledge, and one of them is, you know, like instead of running water but filling a cup and to dispose of, you know, like paint cans.

And these are some of the things that we're doing. And I have prepared this, and my name is Holy Roads Woman. That's the name that's given to me by my people. Also, I'm known as Caroline Yellow Horn, according to your society. I'm a North Peigan, and that's a tribe of the Blackfoot Confederacy. And I just -- I always like to take an opportunity whenever there is public hearings to voice the concerns and the philosophy of my people and how concerned we are about the environment. And it's something that -- that is a part of our lives, and it's so important for us, especially for our children, and it's sad that, you know, it's -- like I say, it's taken 500 years that now, since you've come to my country, that you've realized the importance of taking care of it. And that's all I wanted to voice tonight. Thank you.

MODERATOR MILLARD: Thanks very much.

The next speaker is Sandra Petrich.

SANDRA PETRICH: Hello. My name is Sandra Petrich. I represent the Crowsnest Pass Environmental Society.

The use of fossil fuel is archaic, it's water under the bridge, it's passe'. The long-term effects of carbon dioxide emissions since the industrial revolution are now showing up in adverse, negative, threatening ways. The planet is heating up, our weather patterns are changing dramatically, the ozone layer is ripping apart, skin cancer is on the increase.

Carbon dioxide emissions are disbursed in the air, in the wind. Yes? Out of sight, out of mind, right? Wrong. Carbon dioxide stays in the atmosphere doing irrepairable damage.

Carbon dioxide emissions must be reduced a target of 50 percent, not 20 percent, immediately, and it should be placed upon industry. Industry must adopt tough policy, new technology, such as scrubbers, to prevent further increases of carbon dioxide into the atmosphere. This is very expensive, less profit to the companies, a higher taxation rate for the working people. Our economic system must radically change. Development must slow down.

The Government must be prepared to adopt new technology, develop new energy sources and provide financial backing for our scientists and researchers. The environment must be our top priority. The Government must provide a mandate, a vision, to promote a sustainable world for future generations to come.

The Government must develop goals and objectives and leadership. They must listen to the voice of the people. Example, take the Green Plan was a very good piece of work by many concerned citizens. The Government took the meat out of it and gave the gravy to the country. Instead of sending ships and our people to the Persian Gulf, use our people, give them jobs in a sustainable culture. Thank you.

MODERATOR MILLARD: Thank you.

Cathy Haslam?

CATHY HASLAM: Our Mayor, Dr. John Erwin, is disappointed that he cannot be here with you this evening to personally deliver his presentation. The Municipality of Crowsnest Pass appreciates the opportunity to present some of our concerns with respect to the development of the Clean Air Strategy. Indeed, air quality is a matter of great concern to all of us, and we recognize the traditional aphorism that "we foul our nests at our own peril".

Most of us are aware of concerns regarding the effects of burning fossil fuels and of deforestation. Acid rain and the death of over 2000 lakes in the east is a sin. The loss of great areas of rain forest, such as is occurring presently in Brazil, is of great concern. We wonder about the hole in the ozone layer but at the same time note that such holes have probably occurred before and that the present hole now appears to be closing. We also wonder about global warming, although, again, one must recognize the significant global temperature variations that have occurred in the past.

In examining the effects of burning fossil fuels, we must not overlook the human needs being met by the use of these fuels. Furthermore, we cannot advocate the position that all use of such fuels is bad and that our people should consequently be asked to no longer use these fuels and to freeze in the dark. On the contrary, we must be mindful of legitimate human needs and consider all the economics of any proposals regarding energy use in our society. To be successful, any proposed initiatives must not only be viable but must also be perceived by the general public to be reasonable and viable.

Beyond expressing our concerns and perhaps refusing to buy the products of the deforestation, there is probably little we can do about the destruction of the rain forests in Brazil. There is, however, something we can do about sulphur dioxide emissions and the acid rain in the eastern part of our own country, and that is to continue to remind those who burn coal in the east that high-quality, low-sulphur western coal is available to meet their legitimate needs and that the use of western coal would not only reduce their emissions, acid rain and death of their lakes but would also keep Canadians employed, aid our economy and reduce costs of unemployment rather than exporting jobs to the United States from whom we are importing high-sulphur coal. The use of western coal can be further augmented by purification and size processing and costs to the consumer could also be reduced by using alternate forms of transportation, such as utilizing pipelines.

Recovery of sulphur in gas processing is much more efficient in recent years, and unquestionably close attention should be maintained to ensuring that sulphur dioxide emissions are minimized in Alberta as much as possible. The utilization of effective scrubbers and condensers should be designed wherever appropriate and to any facility processing or utilizing fossil fuels.

Some emissions are proportional to population and become a much greater problem with population concentration such as we see in our major cities, the smog situation in Calgary perhaps being the most notable. Many factors enter into this population concentration, not the least of which are economic factors, including taxation policies and levels and other cost considerations which lead employers who could well locate elsewhere to choose to operate their business in the major cities. These taxation policies could well be changed, leading to an economically-level playing field across the province and encourage decentralization of business, industry and population and consequent decrease in concentration of emissions and smog.

We could also utilize biological systems to reduce carbon dioxide concentrations, for example, by the active promotion of large-scale tree planting.

With respect to trees, logging and the Alberta Forest Service, it should be noted that over the past three decades, Alberta has had the best track record with respect to silviculture of any jurisdiction in North America. We continue to support the position that timber is a renewable resource which should be utilized by man and should be properly managed. This not only implies planting but also implies that trees should be harvested when mature and not be allowed to fall prey to disease, to rot, to burn. The recent disasterous experience in Yellowstone National Park in the United States encouraged by those who advocate natural rather than planned reforestation serves as a shining example of what not to do.

We have heard arguments over the past few years that nuclear power is clean, cheaper and the preferred source of energy for the future. We would take issue with the claim that nuclear power is cheaper as true cost accounting should include the cost of the massive public subsidy of the construction of nuclear plants, the hidden costs of waste disposal, as well as the increasingly apparent high costs associated with maintenance, leaks and contamination. In reality, looking at total costs as well as health hazards, nuclear power is not cheaper and is not cleaner.

Public awareness and recession economics may well dictate a transition to more of a conserver society. At the same time, the public should be provided with balanced information regarding issues, such as the use of energy, and, further, the public must be allowed reasonable individual choice. Indeed, without public support, no initiative will succeed no matter how logical it may seem in the mind of an individual proponent.

Only if they are perceived to be reasonable by the general public can any actions taken by consumers and producers to reduce emissions be practical and achievable. We hope and trust that some of the suggestions we have made with respect to improving air quality will be incorporated as part of Alberta's ultimate Clean Air Strategy.

MODERATOR MILLARD: Thank you.

Larry Frith?

LARRY FRITH: Just some elements that I would like to see in a clean air strategy for Alberta:

All government policies and programs in all areas must be formulated and implemented with a clean air objective in mind. Policies that increase energy efficiency will contribute to reduced air emissions.

Change the way the Public Utilities Board evaluates electrical utilities for rate changes. Present company growth depends primarily on generating and selling more electricity. It's not in the companies' interest to promote conservation which would reduce air emissions.

To change the way electricity is valued, we must uncouple utility profits from their sales. Utilities income should depend on the amount of electrical service provided, not the amount of electricity sold. If more use can be achieved per unit of electricity, the utilities should receive higher revenues per unit of electricity. This would allow utilities to promote and invest in conservation and end-use efficiency and receive better return on this investment the same as they would investing in more generating capacity and promoting greater electrical consumption.

The reduced need for more generating capacity would decrease the capital tied up in long-term facilities. Some of the savings from increased capital efficiency and reduced risk could be returned to the consumer. Fewer air emissions per unit of electrical service are produced, everybody benefits.

The largest areas of potential electrical savings:

First is lighting. In the U.S. lighting and its cooling equipment consume about 25 percent of all electricity. Converting to today's best cost-effective hardware could save up to 55 percent of the electricity used for lighting. The electricity saved would reduce the need for over 70 billion watts of power plants, costing 85 billion to build and 18 billion a year to operate. The figures are probably true for Alberta once adjusted for differences in size.

Electrical motors: Electronic adjustable-speed drives, new high-efficiency motors, plus other improvements in choice, maintenance, sizing and controls can reduce electricity required by these motors in half.

Appliances: New high-efficiency appliances can run on 50 to 90 percent less than the standard models. Electrical savings programs must be planned, designed, financed, built and maintained just like programs to build power plants. Their product, more electrical services per unit of electricity produced, is as much a resource as oil, coal or natural gas.

Although the increased cost of energy-efficient technologies is recovered in a relatively short time, they're often underused. Consumers seldom buy on efficiency, so demand must be pushed by government and utilities.

Immediately install electrical generators in all existing dams and promote non-polluting generating facilities on irrigation canals, etcetera.

Implement programs to make use of industrial waste heat wherever possible before any increase in coal-fired electrical production is approved. Besides the co-generation of electricity and direct use of waste heat near the source, hot water can be carried great distances in insulated pipe. This water can heat city buildings and homes directly or act as a source from which heat pumps can transfer heat into buildings. Heat pumps would then become a reliable, efficient alternative heating method in Alberta's climate and could make even low-grade hot water usable, helping reduce overall air emissions. This could be kept in mind when plant siting and residential zoning plans are created.

Implement energy-efficient building standards in Alberta. The life span of buildings is at least 50 years. They should be built to reflect the energy efficiency likely to be required 25 years from now.

Research in Saskatoon has shown how to build super-insulated houses which can be heated for one to $200 in Saskatchewan's climate. Such houses require heat exchangers for adequate ventilation, but these clear the interiors of many of the pollutants commonly found in homes.

Ensure that Alberta's forest

carbon sink is not depleted. Policies must prevent more forest products being used than are replaced on an annual carbon basis.

Eliminate the adding of air pollutants from cultivated land and increase the soil organic matter as a carbon sink. Most Alberta soils are still losing organic matter due to non-sustainable farming practices. As the organic matter breaks down, it releases CO/2, methane and other pollutants. Alberta soils now contain about half their original organic matter. Farming practices that returned soils to their original organic matter level would remove massive amounts of CO/2 from the atmosphere while increasing the nutrient and water-holding capacity of the soils and improving their productivity.

Adopt a no net increase of CO/2 emissions policy. Increases in Alberta CO/2 emissions can be compensated for by increased forestation to remove equivalent amounts of CO/2 from the atmosphere. This is a cost of production. Much of this forestation may have to be done in other countries. Our CO/2 goes into the world's atmosphere; it doesn't matter where it's recaptured.

Implement true accounting and economic methods. The true cost of any product must include the disposal of it and its breakdown products, along with the cost of correcting any negative environmental effects caused by its production and use. If these costs are not included in the product price, it's false accounting. It asks taxpayers to pay for the product's problems instead of the producers and users of the product. Shareholders pocket money as profits before all true costs have been paid, leaving present and future generations of the public to pick up the tab. We're stealing from our children's economic well-being. Including all the true costs of a product's price will increase production efficiencies and reduce pollution.

Probably most important, eliminate the fighting between the Provincial and Federal Governments on environmental matters. Too much time and resources are spent telling Ottawa and Canadians why Alberta cannot meet federal targets. Spend the time and resources working with the Federal Government and industry to work out how Alberta will meet those targets. The world environment is more important than the governments of Alberta, Canada and their politicians.

All of these proposals have benefits beyond reducing air pollution. The change in ways of thinking their implementation would bring about could create a more efficient and healthy Alberta. Thank you.

MODERATOR MILLARD: Thank you.

That's the list, ladies and

gentlemen, of people who have indicated they wish to speak.

Would there be anyone else who would like to speak? Yes, sir?

ART DAVIS: If I'm a little unsmooth in this, forgive me; I didn't have much notice you was going to have this meeting, so I didn't have much time.

MODERATOR MILLARD: Could you perhaps give us your name.

ART DAVIS: Art Davis, sorry --

MODERATOR MILLARD: Thank you.

ART DAVIS: -- from Sparwood, B.C.

We hear so much about a greenhouse effect and we hear so much about ozone, and it has become the buzz word of the day. We hear a whole lot on this on press, the press has picked it up, and it's become the fad on press, it has become the fad in government, and yet there's some glitches in this that nobody seems to be hearing.

There are men and women and environmentalists that I hear that just awe me on what they have to say, and it's totally different than what we are hearing in the press and what we are hearing from the hand-wringing in government. Perhaps we should have a little look at some of this, because there are other ideas, okay?

First off, let's have a look over

here, greenhouse effect, okay? Greenhouse effect, the theory is that the rays of the sun penetrate through the atmosphere, including the ozone layer, strikes the earth, some is absorbed in the earth, others is reflected, right? The theory is, then, that we have some of this reflected back off of the ozone layer and other layers in the atmosphere and retained on the earth's atmosphere. But there's so many glitches in there, there's so many variables that I could guarantee you that that's pure speculation, 100 percent.

It goes like this: They say greenhouse here. Well, let's just call this a cloud. What does that cloud have to do in this whole cycle? Answer? Nobody's been able to answer that. They aren't even asking the question, except for a very few scientists. The cloud can be a reflector. As it comes in between the earth and the sun, it reflects the light back. The cloud also becomes a heater. The earth is one massive heat engine. It has a very intricate and very complex inter-action between the atmosphere, the hydrosphere, your gases in your atmosphere, and nobody has the answer. I'll tell you that right now.

Now, what you have is a situation where they have computer-modelled greenhouse effect. Illustration to the effectiveness of greenhouse -- or of computer modelling is reflected in new automobiles and aircraft. They're having a tremendous amount of productivity problems and accidents caused by faulty modelling, okay? Because computers aren't perfect and the people who feed them are not perfect.

Now, the Cray II computer, as I understand it, is the world's largest computer, it has the largest capacity of any on the earth. It cannot -- and they have tried -- well, let me just set the stage for this. Weather forecasting is one of my pet studies. I read lots, study lots, and I have picked this as kind of a fun thing. It's awesome to see that, in 1886, '85-'86, they could weather forecast to 62 percent accuracy. Today, it's 65 percent. You don't hear the weather forecast; you hear the weather guess on the radio, and that's why. When they try to model the world's weather in these massive computers, it's virtually impossible to model sufficiently to be able to come up with an output that is accurate.

What does clouds do? Omnino (phonetic), the big current that comes up against the Chilean coast and just raises pure stink with our weather, the Mid-West. Why? How does it work? It also has a reverse. What makes it tick? How does it interface with the atmosphere? How does it interface with the clouds? Questions totally, absolutely unanswered.

We have a problem of ozone. Ozone is a problem, you know, in cities. It's a very definite health hazard in our cities. Every time Dad uses the drill or Mom uses the electric mixer, every time that you see a spark, that you smell that little odour, that little odour you're smelling is ozone. It's an electrically-conducted gas.

Now, when the big arc comes across the sky, it's called lightning. Electrically-conducted gas called ozone is created. That's nature's way of providing us with ozone, okay? Now, it also gives another benefit of several thousand pounds per year of nitrous fertilizers to the earth interacting with the nitrous gases in the atmosphere. So here we have a mechanism now that's going to work -- somewhere in this big heat engine, it's going to have to work that ozone from the lightning strike into that ozone layer that we're talking about here, okay?

Ozone created by -- man-made created ozone has the same properties. Ozone is ozone, right? Okay. So ozone, then, from the cities should be scrubbing and moving upwards into that so-called depleted area, which is just theorized that these CFCs that the young ladies were talking about is going to deplete it. That's only theory, okay? They are guessing that this will happen.

But something is askew. We're missing something like 25 percent of the production of CO/2. Where did it go? The scientists haven't a clue.

We're not considering things like plankton in the sea. But we wring our hands over the rain forests, but what's happening in the planktons? There's more to this than meets the eye, a lot of hype, but there's a lot of fact that's missing.

Please understand, I'm not going against -- you know, trying to discourage anybody, but understand there's other things to think about. And when we start to go for laws and all of this other sort of thing, we're going to have to consider the fact that we're not dealing with full facts. I'm sure we have businessmen here. Would you make a decision on just guesswork? Absolutely not. You would want the facts, all of them, a good solid case before you went to your banker for funds, before you tried to market a product.

And here we are; if we jump in here and we overshoot and really hammer on with these laws and regulations, the absolute guaranteed outreach of this is that you and the Neanderthal is going to have a lot in common. If you like anywhere near the standard of living that you're living and the type of lifestyle that you're accustomed to, there are things that can be done to mitigate some of this problem. There is problems; there's no doubt at all about that. But we're focusing on minute little bits without looking at the whole. We have got to look at the whole and have facts and not fantasy, not computer models, which we're having.

We have commercial scientists like Suzuki and those fellows. It makes good press, but when the rubber hits the road and we're really dealing with down-to-the-earth nitty-gritty, it don't work. You've got dead serious problems.

The young lady speaks of hydrogen. Excellent fuel. A problem: Extremely dangerous to handle, and so it does not make a very good commercial fuel. There's a company just out in North Vancouver who has come up with -- well, these things have been around for a hundred years, fuel cells. So now they have one that the U.S. energy department is looking at for an automobile engine. I hope and pray that it works, but the neat thing is that they are considering to -- somewhere you have to come to hydrogen.

Hydrogen's a unique fuel. We can get it from methane, and their proposal is to get it from coal, methane. Coal, very abundant on the face of the earth, we have lots of it, very clean. You say, oh, no, this guy's nuts. No, not nuts, just practical.

You see, what you're screaming about with acid rain, you're screaming about an 8 percent Pennsylvania coal being burned in the coal-fired plants. That's what the ki-yiing is about. And it's produced a problem.

I personally -- I'm involved in a wee tiny little coal mine endeavour that we're trying to get off the ground. My lab results -- my greatest sulphur in the coal that I'm dealing with is .42 percent. I have some as low as .1 percent. Amazing, isn't it? There is something besides Pennsylvania high-sulphur coal that can be used.

Coal is a very versatile fuel. You can make petroleum out of it. They couldn't understand why the Nazis in World War II kept flying, they just kept going whenever they bombed their oil fields. They made it out of coal. Today, South Africa is virtually completely independent of petroleum because they make it out of coal. There is no Persian golf with them, and it can be with us, okay?

Now, we'll go on to some of these ways that we've got to have energy. There's no way of getting around it. And Alberta can ki-yi all they want to. Unless you get the Soviet Union, you get India, you get the rest of the world to agree 100 percent and work with you, your endeavours are kind of paltry.

Okay, we have nuclear, which was mentioned by the lady back here. Nuclear is an interesting thing. It's extremely polluting in the sense that, if you release radon gas, it can cause downwind problems, stillbirths, cancer, you name it. It's a dandy. You have radio-active waste that defies description. How do you get rid of it? You have neutron bombardment of the container vessel, which weakens this thing, it starts to crack, and now you've really got a problem on your hands. It will rival anything of Chernobyl, which was a cooling problem. It wasn't a container vessel problem, okay? Extremely expensive, long lead times to put it on stream.

You have hydro power. And, once again, you have a massive destruction of the earth's surface. It's permanent or for massive ages to come. You have things like sedimentation and all this in it. That's a -- you know, there's one extremely expensive to build.

Then you have wind, sun. Most of your -- I seen a picture here someplace -- bigger arrays of generators are necessary. It's all right for this gentleman out here to have one for his farm. That's no problem. And it's good for a local power source situation, but all of those that are on stream are big farms of these things. So again you're alienating land, which everybody complaints about. So you can't have everything, you can't have both, okay? Just like the hydro dam, okay?

The -- well, you have fuel cells, for instance. Up until now, they've been very expensive and they're very large, and they use hydrogen as a fuel, and all of our NASA space vehicles generally are powered with fuel cells. Very efficient, excellent machines, but they have that -- hydrogen is highly explosive and very dangerous.

I've already shared with you about the North Vancouver unit, which we're definitely hoping does come on stream. If it works, I would sure like to have one. I run my truck on propane right now. Because I'm not against environmental -- you know, it just may seem like that's the fact. That's not it. I love my propane. It's probably one of the most desirable fuels around, in a practical sense, for distribution and so forth.

Okay, then you have -- well, let's go to biodigesters. This is something that nobody's ever -- you know, you hear about all these waste problems, air pollution from your land fills, and yet I know of a little company that's on the Vancouver Stock Exchange expressly for biodigesters and biogas. It's a unique machine in that you use anromatic (phonetic) instead of aeromatic (phonetic) bacteria, aeromatic in the cesspool, and anromatic, which excludes air from this system.

I'll illustrate this from a gentleman in South Africa. His name is John Frey (phonetic). And John has a large hog farm and generates 17 pounds of manure a day, so he feeds this into a biodigester. What it does, it produces hydrogen gas the young ladies was talking about here. John uses it, compresses it successfully and uses it in his tractor, all of his trucks and vehicles that he has on the farm. It goes to his generator to run his generator. It also goes to his home where he heats his home, and he also cooks with it. It's a very effective way of working.

I was just talking yesterday with a gentleman from East India -- from India there, and he was just saying that they had -- him and two brothers, they had their homes in a kind of a circle, a little digester in the middle, and it took about two shovels full a day in there to produce the gas that these three families needed. A very overlooked method of solving some very significant problems.

Okay, natural gas: Natural gas, very expensive to access. You have the infrastructure of the pipelines and so forth. But it's a very good fuel. Natural gas, though, you have to understand, is 98 percent or 93 percent, something -- maybe one of these gentlemen could probably tell me better -- methane, again, this fuel here.

Now, we also have one other item that we -- oh, and the other thing is expensive -- it's going to be very expensive. All of your regulations are off of it now, and look for natural gas to go through the ceiling. The United States of America loves Canadian gas.

So we're going to have to find something that will take the place of it, because a lot of your generators, your electric and all that, are fired not by coal, as most would think, but by natural gas. But now as a good manager, I would be looking for a more inexpensive fuel to produce my electricity. And we have it right here in Alberta, coal, low-sulphur, high-quality Canadian, Albertan coal. Let's look at it, see what we've got.

First off is the primary gas released is methane, carbon and hydrogen, okay? Now, you can blend it to address varying needs, so if you don't have one -- you know, one seam is one quality and another is another, you can blend this thing and come up with a viable product that's usable.

We already have technology to mitigate nitrous oxide and carbon dioxide. I would bring to your attention an article here from November 1990, Canadian Mining Journal, and it's -- the setting is Cold Lake, Alberta. They have completed an 11.7-million-dollar joint project led by Esso Resources and TransAlta Resources investment, and what this essentially is is a portable unit. They steam the -- they bore holes and they steam the heavy oil, of which there is a fair amount, I guess, by the way it looks.

Now, also, Lloydminster has large fields of heavy oil like Venezuela does. You can't really pump it. It's kind of like tar, eh. So what they do is they inject steam, okay?

Now, this little unit here that they've been working with is just a small unit, it's portable so they can move it through the field, but it's unique in that they have reduced the sulphur dioxide emissions by more than 70 percent for sub-bituminous coal and more than 80 percent for bituminous coal, which is what we have in this area here.

These reductions are achieved at only about 40 percent of the capital cost and 20 percent of the operating cost of flue mass scrubbers, which is most of what -- you probably heard about, scrubbers that go on the stacks. Well, this little gismo here, good old Canadian technology -- of which we have more too, we have fluoridized beds over here -- coal is one of your finest fuels that you possibly can have, and Alberta has lots of it. Let's not sell it short.

This low-nitrogen no-sulphur unit did also cut nitrogen oxide emissions more than 80 percent and remove up to 80 percent of coal fly ash. Now, you might not understand that terminology. Fly ash in coal is simply the unburnable part, you know, something in there that can't burn. Generally, we're looking at various and sundry minerals. There's a wee whisper of a trace sometimes of heavy metals, but not that much. It's recoverable, it's reuseable. It's a very usable product, the fly ash.

When you have clinker, which is also a product -- like, if you have silicone, you read sand -- and things in -- impurities in your coal, you will come out -- if it is burned in the fire box, you'll have -- in the grates, you'll have a thing called clinker. You might see it as you walk along the railroad where an old steam engine has been. It looks like molten glass, because, essentially, that's what it is. And this is usable in the construction industry. Again, a very versatile fuel. Even the by-products are usable, okay?

So, anyway, if these people switch over, you'll be looking -- now, this thing burns -- let's just see if we can find this for you here -- this right now burns 17 -- at a rate of 17 million b.t.u.'s per hour. That's a fair burn, okay? The units now on line are 180 million b.t.u.'s per hour. This could mean they are going to have to switch from natural gas, because with deregulation, it's going right through the ceiling.

Now, economics definitely has to be a factor in this. I believe, like the ladies' presentation here, how we approach this has to consider our economics, our lifestyle and all of this other sort of stuff, other ways of thinking besides the hype in the press that you hear. I've tried to share just some of these things, but you can be an informed individual. You don't have to be in the dark, and you can make a sane decision.

You see, we complain about carbon dioxide, for instance, let's just say. This has just been added, as you said, was it, I believe, to the pollutant list? Carbon dioxide -- if you study paleoclimatology, which is just a big word for saying ancient climate, paleoclimatology will show you that the carbon dioxide levels of the earth in ages past many times over has been far in excess of what you see today. Again, a non-problem.

What -- nature's way of responding to excessive carbon dioxide is it produces more lush vegetation. This is where the burning of the rain forest can be a -- present a problem. This is where the Canadian Government -- I think you mentioned reforestation. Right on, okay? Because, with the higher carbon dioxide, then there is this increase in vegetation.

So there is so much that we have not touched on in understanding what is going on in our atmosphere, in our earth. I have studied and studied and studied and studied for years. I'm a reading freak. I read just about anything except sports. And I'm telling you right now, the more I know and the more I understand, the more impressed I am at how little I understand and know.

And I'm also impressed too as I understand how science and scientists work. I am very disappointed. A real scientist you will have no trouble with, but what we have now is a political system of where you must have a certain amount of prestige. You do this by publishing. Publish or die; that's the word. And oftentimes, these men and women -- not so much the women folk but -- the men, they publish just for the simple sake they got to publish or die, and oftentimes they'll publish research that basically starts good but they never have the opportunity to carry it through. They have a reputation that must be maintained.

I am delighted to see that we're getting some breakaway scientists, men and women of credentials that are beginning to say never mind all of that, we have a responsibility to the earth that -- we and the people that we are part of, and they're beginning to ask honest questions and demand honest answers, and when they write, it would behoove us to listen.

And this bothers me, because these men and women -- I call them ecologists. A lot of them are, some of them are not, but, nonetheless, it amounts to the same thing, as, you know, affecting ecology -- are not being heard. A lot of people, as I call them, are airheads and brain dead. Brain dead is where there is a lack of mental activity. And these people are the ones you see in the headlines, you hear on -- you see on t.v., it's on the radio. Look out. Rather be wary and search these men and women out that do know and listen to what they say, because they're asking the right questions and they're seeking genuine answers to honest problems, and in a way that would be compatible with us to live.

What I'm going to urge you gentlemen and ladies, as you approach these regulations and whatever you do, start slowly and be careful, because if there's an overshoot in the regulatory process, it's incredible the damage that can be done. And, as you're aware -- all of us are -- once a law goes into the books, it takes heaven and hell to move the darn thing. You can't down-size something so easily, but you can upgrade it if you find -- if you set a standard and it happens to be a tad low, you can upgrade it gently, successfully, because you can justify it. You can say, whoa, look, we've done this and it didn't work, we need a little bit more here or a little bit more there. But to start to bring it down, I think you're pretty well aware of the shouting that would go on, eh.

So better to start slowly and carefully with wisdom and come out gently, and you'll accomplish the same thing without disrupting your life, other people's lives and the whole ecological system of our earth. I thank you very much.

MODERATOR MILLARD: Thank you.

Is there anyone else that would like to make a submission?

Ladies and gentlemen, I thought maybe we might ask Dave Whitefield, who is with Energy Conservation, part of the energy -- Alberta Energy, and ask him if he would comment on conservation measures that have come out of a particular program that he is involved in with the Department. Dave?

DAVE WHITEFIELD: Okay, basically, they just wanted me to comment on some of the activities that the Energy Conservation Branch, formerly, now the Energy Efficiency Branch, has been working with over the last ten years.

For the residents of Alberta, we have offered what's called a hot line. It's a toll-free number. They field about 6,600 calls per year in energy management for the homeowners. They also run a myriad of booklets, what we distribute through warehouses -- or hardware stores and things like that. They're more of a self-help, what the homeowner can do to save energy.

Another program that we operate is for schools, mainly for the teachers and the students. They send out -- they visit about 80 schools per year and send out kits for the teachers on energy management and how to get involved, and they go right down to even doing public shows for the smaller children, being that they're the future energy users. Their main message is to use energy wisely.

In the transportation industry, we're getting more and more involved, mainly because of the oil strategies, the lease problems that are coming about. There we offer programs in terms of what's called a transportation energy audit. That's where we go and analyze a fleet to see how efficient their trucks are tuned to running correctly. We can do some routing programs for them, make sure that they're using their trucks most efficiently and effectively; instead of sending ten trucks out, they may only get away with five just by doing the proper routing.

And for the common person, like you or myself, we have fuel economy calculators where we give tips to the drivers and try to make sure you know how many miles to the gallon, just tips on how you can drive. They also run in the transportation sector a safe driving with -- it's called Decaff (phonetic), where they're teaching drivers to drive more energy effective. In those areas there, they can achieve in the neighbourhood of 30 percent savings just in the gasoline and diesel fuels that they're using, so again they're promoting energy efficiency and using that energy wisely.

Mainly in the commercial and

industrial and institutional municipality type of facilities, hotels like this, factories and things, we have operated -- myself, I've been totally active with the industrial commercial sector for the last ten years, and we run what's called mainly the Energy Bus program. Now, it's parked out front. You're welcome to take a look at it. I have an overhead that shoots a picture of it here.

What this bus program really is is an awareness program that we operate throughout Alberta on a first-come-first-served free basis, and it's mainly a mobile office. It's highly visible. And on that bus we send out a three -- two- or three-man team to go and analyze how much power and electricity and natural gas and various energy sources, where they're being used within the building or the given facilities.

So over the last ten years, we've done about 1600 different audits, and as a result, we've got -- being technologists and engineers, we've got all kinds of numbers that we like to show off. The main types of facilities that we've looked at over the last ten years, this is kind of a broad base. We've looked at a lot of recreation facilities; they represent about 12 percent of our results. Municipal buildings, being all rural districts and some of the cities. Religious, that includes any churches or bible colleges throughout the province. Industrial, we've looked at 10 percent of the industrial -- it would represent about 10 percent of our energy audit. Government facilities, being hospitals and things like that. Agricultural, residential, hospitals. Commercial, commercial being anything from a grocery store right on through to say a greenhouse operation.

So it's pretty well varied on the things that we've seen, but I think what we'll find in the next slide is that there's a common denominator in most of them where we can break down the types of savings that we get just in 10 or 12 categories.

We've done the audits throughout Alberta with directions for Alberta. We don't concentrate on any given city. Edmonton, we've done a lot of the work in pulp work there, mainly because it's really the industrial heart of Alberta, they've been quite active in this.

Now comes the real number cruncher. In terms of dollars, we have looked at the energy usage in Alberta. It represents about 154 millions of dollars per year of energy. And we feel, after we've been through those facilities using low-cost and no-cost energy efficiency measures or conservation measures, that we can reduce this to $125 million per year.

Now, being big number cruncher

guys, we break this down in terms of kilowatt hours, and that would be whether it's gas, coal or electricity, we keep it in common units of kilowatt hours, so that represents about 10.7 billion kilowatt hours that we can reduce down to about 8.9 billion kilowatt hours per year. So, in reality, that works out to about $29 million per year savings or $1.8 billion per year of kilowatt hours, which we can equate back to tons of CO/2 being cast out.

Now, where do we get these savings? Well, we can spin off all kinds of money savings again, but this is a simple breakdown of where most of our energy savings comes from. Of that 29 millions of dollars per year, power factor production, which is simply installing capacitors, represents about 5 percent.

Heat recovery, that's where we can utilize a lot of the heat losses in combustion air, creating combustion air. You take hot gas, heat recovery say off an arena; we're trying to put that into use for ice flooding, things like that.

Building skin losses, 12 percent savings of the total savings. Well, that would apparently be by setting temperatures back at night when nobody's in the building. They usually recommend five to ten degrees, but take it back as far as you can get away with.

It also includes things like weatherstripping, and we consider those all- or no-cost, because they can be done manually or you can do those on an ongoing basis or you can spend a million dollars for a computer to do it for you.

The lighting is a big chunk. In Alberta, we figure there's probably about 25 to 30 percent of the energy in electricity just being used for lighting alone, and of that we can probably reduce it by 23 percent. Mainly about four or five items there is using energy efficient lighting sources. That's why you see all the street lights being converted from say a mercury vapour to high-pressure sodium, going from the greenish mercury vapours to the yellow high-pressure sodium. And high-pressure sodium lamps are about twice as efficient as the mercury vapours.

Just in rooms like this, we'll suggest that they take the fluorescent tubes and use low wattage versus a standard tube. Some of the states -- in some of the United States, they have actually banned standard 40 watt tubes, you have to buy lower watt tubes.

Shutting off represents a large chunk of those savings. I think what you're hearing more and more is the use of these compact fluorescents where we can go from say a 60 watt bulb down to a 13 watt compact fluorescent and achieve the same light output. So it can represent quite a large chunk of the savings. It actually represents, of those 29 millions of dollars per year, $6.6 million a year in savings.

Load schedule -- I'll skip the miscellaneous. That it's a whole pile of stuff that we don't really know where to categorize it. It's all individual jobs.

Load scheduling, that's where we get into a facility where they're using a lot of different electric motors and things like that and the guy has a machine running here and he has to do something on another machine, so instead of turning this one off, he walks over, turns that one on and uses it for 20 minutes, while he's set a new peak demand, and it could bring -- the utility companies have to fire up say a new generator just to cover that guy for 20 minutes, so they make him pay for that. So what we encourage is you shut this machine off, then use that one, finish with that one, shut it off and come back. That's load scheduling. That's not using two things at the same time when you don't need them.

Combustion efficiency: We find just by doing simple boiler checks on combustion -- that's fuel-to-air ratios -- we can achieve a 2 percent savings on average in this whole picture. What that means is we go into a facility and check the boilers, and if they're running about 70 percent efficient combustion-wise, we can dial them up by using different technologies or just simply using proper instrumentation to set the flame and bring it up to maybe 80, 84 percent. Well, that's going to be 12 percent right off your heating bill right there, so it's a simple thing we can do.

What's unique in Alberta is the fuel conversions. In Alberta, it costs about four times more to use -- to produce or to buy one kilowatt of energy in terms of electricity than it would be with say natural gas. So where this really comes into play is, if you're buying say electric dryers for clothes drying, it's going to cost you four times to five times more per unit to operate that electric driver versus say a natural-gas-operated dryer.

Kitchens, commercial kitchens, they like to do water boosting from 140 to 180 for final rates to meet their health regulations. Well, we can achieve that by using a natural gas booster versus say a 40 kilowatt electric booster. So fuel conversion has been one of the key factors. Even though we're not saving energy, we're going to a cheaper form of energy but also, per se, a less-pollutant energy in this case.

Ventilation represents about 19 percent of the total savings that we can identify, and that's simply in 99.9 percent of cases shutting fans off when nobody is in the building. So we're saving both on natural gas or heating costs per se, because for every cubic foot of exhaust, we have to bring a cubic foot of cold air in. Typical bathroom fans, say in Alberta, it's about -- it would cost you a hundred dollars a year just to keep that air -- just a small fan, if you left it running.

When we get into the large office towers, you can save substantial amounts just by shutting those fans off at night when nobody is in the building.

And miscellaneous is different things like tank/pipe insulation, equipment modifications, just like was quoted earlier, energy efficient electric motors, variable speed drives, things like that.

And water can't be overlooked either, because there's a lot of hot water that we can save just by putting flow restricters in and things like that.

So it all adds up. And I can bring out, you know, over 1600 jobs we've done. We've probably got a thousand different cases where we can save. And I think, just to sum it up, to keep it short, what this means to us is, on the savings end, we're getting the top, because with the Energy Bus, we have identified the potential. We haven't -- we do a follow-up, but we have identified that there's a potential of 18 percent in electricity, 82 percent savings in natural gas. This actually represents about half a million tons plus per year in Alberta just by using low-cost energy conservation measures.

So I think that pretty well sums it up as best I can.

MODERATOR MILLARD: Thanks very much, Dave.

Does anyone else wish to make a submission?

Well, perhaps we could break for coffee, and there may be some discussion, but it can carry on while you're having a cup of coffee. Thank you.

(Meeting ended at 8:50 p.m., Thursday, Dec. 13th, 1990)

COURT REPORTER'S CERTIFICATE:

I, Louella Wood, CSR(A), Court Reporter, hereby certify that the foregoing pages contain a true and correct transcription of my shorthand notes taken herein, to the best of my knowledge, skill, and ability.

Irene L. Meyer CSR(A)

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